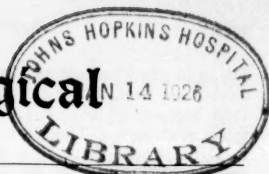


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ORIGINAL ARTICLES

THE TREATMENT OF GASTRIC AND DUODENAL ULCERS*

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BEFORE discussing the treatment of gastric and duodenal ulcers we must have in mind what it is we are attempting to do. It is one thing to point out why a certain mode of treatment is preferable in the vast majority of cases. It is quite another to work for satisfactory results in all cases. Ulcers vary markedly in the course they run. Some heal easily. Some doubtless heal without treatment. Some are most obstinate in responding to the best methods of attacking them. But to the patient who presents himself with an ulcer his own particular case is all that matters. He does not care to hear that many heal without treatment, that perforation or severe hemorrhage occurs in only a relatively few, that if he submits to an operation he stands a chance of only 1 per cent of dying. He wants to know if his ulcer will perforate, if he is going to be the one out of a hundred cases that is going to die from an operation. It is small consolation for him to know that 99 other cases are well and happy after he has been placed six feet underground. If, then, one is going to treat the individual case and, because no two cases are exactly alike there, can be no fixed method of treatment that can be outlined in black and white. Success will come only to him who knows ulcers in all their forms and who knows the advantage and disadvantage of the different kinds of treatment.

The treatment of ulcer demands, therefore, the recognition and knowledge of the following:

1. The potential source of danger to the patient who has an ulcer.
2. The variations in the tendency of ulcers to heal.
3. The factors involved in the failure of an ulcer to heal.
4. The conditions present which must be overcome to permit healing.
5. The various methods of treatment and what may be expected from them.

THE POTENTIAL SOURCE OF DANGER TO THE PATIENT WHO HAS AN ULCER

There are methods of treatment which control the symptoms sufficiently but which have no

effect on the healing of the ulcer. Are we justified in employing this form of therapy? I think not. Where the danger of perforation or of hemorrhage is as real as it is in ulcer we should not neglect it. One is dealing with the individual and though the number of ulcer cases which perforate or hemorrhage are relatively small, yet one cannot predict whether the case in question will undergo such a misfortune. One is justified, therefore, in imposing a treatment which, though time consuming and bothersome, is efficacious.

THE VARIATIONS IN THE TENDENCY OF ULCERS TO HEAL

Here again we are faced with the same situation. Despite the fact that a certain number of ulcers heal spontaneously and others heal on mild treatment we cannot predict anything as to the individual case. It is far better to assume that every case is going to be chronic and treat it accordingly. Thus we can rule out any treatment which has nothing in its favor except that it makes the patient comfortable and is easy to carry out.

THE FACTORS INVOLVED IN THE FAILURE OF AN ULCER TO HEAL

There are three main theories advanced to explain the failure of ulcers of the stomach and duodenum to heal:

- (1) Infection, (2) Irritation, (3) Peptic activity of the gastric juice.

As far as infection goes, we are unable to influence it and must rely on the resistance of the body to overcome it.

With regard to irritation, we have a different situation. Whenever we are dealing with a pathological process one of the fundamental methods of treatment is to give the region rest. Therefore, this becomes of importance in the question of therapeutics. Irritation may be due to surface contact, as a result of food being washed over the ulcer. For this reason many of the diets use as bland food as possible. However, when one considers how rapidly any foreign body or irritative substance in the stomach receives a smooth coating of mucus, it seems doubtful whether one can influence surface irri-

*An address delivered before a meeting of the Brockton City Hospital, June 2, 1925.

tation to any great extent. In considering peristalsis as a cause of irritation the nature of the food becomes of more importance. Since peristalsis continues so long as there is food present in the stomach, the length of time it takes the stomach to empty is going to influence the amount of peristalsis affecting the ulcer. The length of time it takes the stomach to empty is in turn dependent on the degree of obstruction present and the coarseness of the food in the diet. A bland diet is, therefore, going to decrease the amount of peristalsis. However, the normal stomach receiving 3 average sized meals of bland food sufficient for the carrying on of the daily activities takes at least 3 hours to empty itself of breakfast, 3 hours for lunch and 4 hours for dinner. As a matter of fact, my experience has been that the normal stomach contains food much nearer 13 to 14 hours. It is difficult to see, therefore, how the emptying time can be cut down much below these figures. In other words, about the best we can hope to do from this standpoint is to keep the factor of irritation down to the point under which the ulcer originally developed.

The third factor that enters the field of treatment is the peptic activity of the gastric juice. If a series of tubes are set up containing artificial gastric juice of an acidity varying from 0 to 100 points of free HCl and it is allowed to digest albumen in the form of Metts' tubes, it is noticeable that the amount of digestion increases as the degree of acid increases. The amount of digestion depends on the strength of the acid in the mixture and the length of time that the mixture is in contact with the juice. If another series be set up in which the mixture constantly flows over the Metts' tube, no difference in the rate or amount of digestion will occur. These facts illustrate 2 points as regards the effect of the gastric juice on the healing of an ulcer. The corrosion that takes place will depend on the strength of the acid and the length of time the acid is in contact with the ulcer. Moreover, a high acidity acting over a comparatively short space of time may not be any more detrimental to the healing of an ulcer than a weaker strength of acid acting over a longer period of time. In addition, the amount of gastric contents passing over the ulcer is of no importance so far as the extent of digestion is concerned.

Theoretically we can decrease digestion by

1. Shortening the time of contact, namely, by
 - (a) Decreasing the emptying time of the stomach.
2. Lowering the concentration of acid by
 - (a) The giving of alkali,
 - (b) The giving of food substances which tend to decrease the production of acid.

By using all of these methods it is possible to keep the ulcer free from acid at all times, thus

adequately preventing all digestion from taking place. Unfortunately, it is not known how much digestion must take place to impair the chances of an ulcer to heal, even if the factors of irritation and infection are at a minimum. But it is important to recognize that of the 3 hindrances to healing peptic activity is the one factor that can be completely overcome.

Before leaving the subject of acid there is one more point which must be mentioned because it is of so much importance, and that is the question of the relationship of acid to pain. Sippy believed firmly in a definite relationship existing between the pain of ulcer and the free HCl content in the stomach. For each individual case the pain will be associated with an acid of a definite strength or in excess of that amount. If the strength of the acid is brought below this point by the giving of alkali or employing other measures the pain will disappear. For example, suppose we find that when a patient is having pain he has 60 points of free HCl in his stomach contents. If now the acid is lowered to 35 points the pain will disappear. However, as has been previously suggested, 35 points of free acid may be just as detrimental to the healing of the ulcer as the original 60 points. In other words, freedom from pain does not mean that the ulcer is healing. These ideas of Sippy have met with strong opposition. One of the strongest arguments against a relation between acid and pain of ulcer is brought out by Moynihan*, who reports that he has removed ulcers from patients who had an entire absence of free HCl and who had had the clinical symptoms of ulcer. The answer has by no means been found. Since this has been written I understand some work has been done which it is hoped will answer this question. It is to be published shortly, I believe. On the one side is the statement of Sippy that he has found the above conditions in all the cases that had come under his care. On the other side we have the statements of extremely able clinicians to the contrary. As for myself, I can only say that so far I have never yet seen an undoubted case of ulcer giving typical symptoms which did not fulfill Sippy's requirements.

THE CONDITIONS PRESENT WHICH MUST BE OVERCOME TO PERMIT HEALING TO TAKE PLACE

In addition to keeping the above factors in mind one must also be acquainted with and recognize the various conditions or complications which may exist. To handle an ulcer case adequately one must have the following data:

1. What is the acidity of the gastric contents?
2. How much, if any, obstruction exists and is it due to
 - (a) Spasm?

*Moynihan: Brit. Med. Jour., 1923, 1:221.

(b) Inflammatory swelling?

(c) Cicatricial narrowing?

3. Is there a hypersecretion present?
4. Is there a continuous secretion present?
5. Is there a perigastritis present?
6. Is there an hour glass constriction present?

Knowing the acidity of the gastric contents is of importance, for on the strength of acid will depend the efficacy of any treatment which does not aim at doing away with all the free HCl. In other words, no fixed diet can be equally effective in combating the corrosion of an ulcer in all cases. Suppose, for example, we have two patients, one with an acidity of 80 points, the other with an acidity of 35 points. If both received a prescription which caused a continuous neutralization of 20 points of acid the former would have his acid reduced to 60 points, whereas the latter's acid would be reduced to 15 points. Referring to the Metts' tubes again, an acidity of 60 is very active, whereas an acidity of 15 is very slow in digestion, and reducing the acidity to 15 or lower may be sufficient to give the ulcer an adequate chance to heal.

Obstruction must be recognized if it exists, as it means increased irritation and increase in the duration of contact with the acid. If there is 12 hour retention it is obviously of little value to treat the ulcer during the day and neglect it during the night, as under these conditions we are not influencing the amount of irritation appreciably, and if one does away with all peptic activity during the day there is still 12 hours of corrosion going on during the night. If retention is present, therefore, suitable means must be utilized to overcome it either by the stomach tube or by surgery. Obstruction due to scar tissue demands recognition because it can be relieved only with surgery. Obstruction due to spasm or inflammatory swelling will be alleviated if the ulcer begins to heal.

Hypersecretion is a condition in which the stomach responds by pouring out an excessive amount of secretion. It increases the difficulty of lowering the acid to an innocuous stage. Again, a diet which is adequate to cope with a given acidity without a hypersecretion is not necessarily adequate to deal with the same acidity combined with a hypersecretion. Failure to recognize a hypersecretion will mean failure to obtain a cure.

Continuous secretion is a condition not uncommonly found in ulcer cases where the stomach continues to secrete after the stimulus to secretion in the form of food has disappeared. Such cases frequently secrete throughout the night, even though the emptying time of the stomach is not much increased. Here again there is danger of treating the ulcer satisfactorily during the day and be disregarding the fact that there is sufficient activity going on during the

night to entirely do away with any reasonable possibility that the ulcer will heal.

The recognition of perigastritis and hour glass stomachs is of importance in evaluating the effect of treatment, as with these conditions present it will require a much longer time for the symptoms to subside. Failure to appreciate their presence may cause doubt to be thrown on the correctness of the diagnosis, or to minimize the value of the method of treatment being used.

THE VARIOUS METHODS OF TREATMENT AND WHAT MAY BE EXPECTED FROM THEM

Keeping the above theories and conditions in mind, let us consider the methods used for combating the situations involved. The forms of treatment in common use today may be broadly divided into:

1. Surgical and
2. Medical.

Of the latter we have those which

1. Lower the acidity.
2. Completely abolish the acidity.

Of the surgical methods we have to consider chiefly

1. Gastro-enterostomy.
2. Pyloroplasty.
3. Transection of the pylorus.
4. Complete removal of the acid bearing portion.

With a gastro-enterostomy, we decrease the emptying time depending on the size of the resulting stoma, but here I would inject a word of warning. Testing the functional results by fluoroscopy the stomach in the upright position may be quite misleading. The barium mixture which the patient drinks is thin and heavy. It tends to pour through the stoma much more easily than in the case of food. It has been my experience that a stomach on which a gastro-enterostomy has been performed does not empty itself of food nearly as rapidly as it does of barium. Moreover, if in these cases one has the patient swallow the barium lying down so that the heavy barium does not rush through under the force of gravity, peristaltic waves will frequently be seen to start and tend to sweep the barium past the stoma against the pylorus. Roughly, the amount of material passing through the stoma is to the amount passing through the pylorus as the size of the stoma is to the size of the pylorus. Gastro-enterostomies produce a relatively greater decrease in the emptying time as the amount of obstruction at the pylorus is greater, but in general it results in an emptying time only a little shorter than normal. The concentration of the acid is lowered somewhat, thought to be due to regurgitation through the stoma. In most cases it does lower the acid to a point where the patient

no longer experiences distress. Most cases, therefore, obtain immediate relief from symptoms. Whether it lowers the acid enough to decrease seriously its corrosive qualities will depend on the original degree of acidity present. Cases of continuous secretion are usually not affected by a gastro-enterostomy and we should not expect a favorable result in these cases. The great advantage to this form of treatment is that it is a short and relatively simple means of therapy for the patient. The disadvantages are the mortality incident to the operation, which in the hands of a good surgeon is 0.7 to 0.9 per cent, but is still to be considered. Surgeons and clinics have reported cures by this method as high as 97 per cent to the lowest which I have heard quoted as coming from a first class surgeon of 66 per cent. My own experience has been that we can expect a good result in approximately 85 per cent.

With the various kinds of pyloroplasties in use, the emptying time is decreased a little better than normal. Irritation is not essentially influenced unless there is marked retention before operation. Hypersecretion and continuous secretion are not influenced. The degree of acidity is not affected and the operative mortality is greater than with a gastro-enterostomy. I cannot see that they have any theoretical or practical value over a simple gastro-enterostomy and I am opposed to them.

By doing a transection of the pylorus and a gastro-enterostomy we are doing away with all surface irritation and all contact with the gastric juice. Theoretically, the operation should obtain satisfactory results in most cases of duodenal ulcers. The chief objection to the operation is the increase in operative mortality which results, and the occasional occurrence of a gastro jejunal ulcer. Moreover, we do not know what the ultimate effect of entirely excluding all of the gastric contents from the duodenum is going to be in future years. One other objection which holds equally true with a simple gastro-enterostomy is that the operation at times stirs up an intestinal distress in susceptible individuals, through the rapid emptying of the gastric contents into the intestine.

Where the whole acid bearing portion of the stomach is removed the operation of subtotal resection as done by Finsterer is very radical. It does not seem to me we are justified, except on rare occasions, in performing such a gross manipulation for a condition which can be adequately treated in other ways.

When we come to a consideration of the medical treatments we find diets of all kinds and descriptions. These diets are the outgrowth of the varying opinions of clinicians as to the reasons that ulcers do not heal. There are those that are based primarily on the principle of decreasing irritation and those based on decreasing the amount of corrosion. Some of the latter rely on

alkalies to lower the acidity, whereas, others make use of foodstuffs which are supposed to stimulate the production of acid as little as possible. Some diets are used because they have been found to control the symptom, although, as previously pointed out, control of symptoms does not necessarily mean that healing of the ulcer is taking place. Finally, one hears of almost countless combinations which are outgrowths of modifications of some standard diet. Only one of the medical treatments aim for a definite object, namely, the Sippy diet, whose purpose is to do away with all corrosive action of the gastric juice. All the others worth mentioning tend to decrease the irritation and to decrease the peptic activity but not to abolish it. It would take too much time to discuss all these various diets individually, but in general all do about the same sort of thing. All use frequent feedings, usually from 4 to 6, and practically all use a certain amount of alkali. With 6 feedings or even 4, there is going to be food present in the stomach from 12 to 14 hours where there is no obstruction, and longer where obstruction is present, and this will be true even if the food is of the blandest character. Therefore, such diets accomplish little decrease in the time of peristalsis over the normal and the time of acid production. Cases of hypersecretion and continuous secretion are not going to be influenced by these means. The concentration of the acid will be lowered in virtually all the cases by the frequent feedings and the giving of alkali so that the patient gains freedom from symptoms during the day, and midnight distress can be quickly controlled with alkali taken at that time. With freedom from distress the patients frequently lose the worn expression which the ulcer patient is so likely to have. They put on weight as a result of eating better and to outward appearance are doing very well. But where we are not influencing the irritation factor much below the point occurring in a normal stomach which is similar to the conditions under which the ulcer developed, we have to rely on the hope that we have kept the concentration of the acid to a point low enough to make conditions favorable for the ulcer to heal. This we can hope for in the 10 to 15 per cent of ulcer cases which have an acidity of 30 or under, but even if we succeed in keeping the acidity down to 10 points we cannot be sure that all conditions will be such as to make for the healing of the lesion in any particular case. It is true that sooner or later most ulcers probably heal if given half a show, as shown by the few unhealed ulcers found on the autopsy table. However, the possibility of hemorrhage or perforation is the most serious aspect of using these forms of treatment. One can never be sure that a hemorrhage or perforation will not occur while the patient is on the diet. These diets permit most patients to become symptom free without much trouble

or loss of time. But, the danger of hemorrhage or perforation to my mind is sufficient to offset the ease of relieving symptoms.

Finally, there is left to be considered the Sippy method of treating ulcers. Recognizing the fact that wherever there was any free acid present peptic digestion was occurring, Sippy argued that if he could evolve a method whereby he could keep the ulcer away from acid at all times he would obviously be giving it the best chance of healing so far as the acid theory is concerned. He found that the only way he could do this satisfactorily was by giving frequent feedings and powders which has become known as the Sippy diet. The excellent results which he obtained with this means of treatment made him become more and more convinced that the peptic activity of the gastric juice was the most important factor in preventing an ulcer from healing. That it has not been sufficiently recognized that his diet is a means towards an end may account for the fact that it has not met with the same good results in the hands of other physicians and for the many numerous modifications which individual practitioners have developed for themselves. The diet as Sippy published it is simply to give a working basis to start with. The size of the powders must be varied for the ease in hand and to put the patient on the diet without adequately controlling the acidity is of no more value than in using any of the other means of treatment where the acidity is only lowered without being abolished. My experience with the diet has shown the early results to be all that Sippy claimed for it. In uncomplicated cases relief from symptoms is obtained within 24 hours. In the presence of perigastritis discomfort disappears in from 7 to 10 days. Penetrating ulcers of the stomach disappear rapidly as viewed by the X-ray. Cases with hypersecretion and continuous secretion can be brought under control. Where there is obstruction 85 per cent of the cases open up in 6 weeks; $7\frac{1}{2}$ per cent of the 15 per cent remaining in 9 months; $7\frac{1}{2}$ per cent never open. But rather than wait this long it seems preferable to operate on those cases where retention persists at the end of 2 months.

The objection that we are causing too much irritation by the frequent feedings falls to the ground in that if the regime is carried out correctly there will be food present in the stomach not over 13 hours, or not longer than in other treatments. A much more valid objection is the inconvenience attached to the frequent feedings. There are some patients such as laborers who cannot remain on the diet. Then there are a certain number of patients who can but will not follow the diet. During the past year we have been trying out the diet at the Peter Bent Brigham Hospital. All cases on the medical service have been started on the diet unless there were some definite contra-indications. Of those start-

ed approximately $\frac{1}{3}$ kept to the diet, but this figure can be improved as time goes on. However, this factor is always going to be a consideration in the management of cases seen in the clinic. It is yet too early for us to say anything about the ultimate results of this series at the Brigham Hospital. All that can be said is that the results to date have been very satisfactory.

Disadvantages of the treatment are the amount of time required, the inconvenience of having to take something every half hour throughout the day, a condition which some patients are unable to adhere to. The advantage of the method is that it is the only one which definitely overcomes one detriment to healing. In other words it is giving the ulcer its best opportunity to heal.

SUMMARY

We can sum up the methods of treatment therefore as follows:

Treatment	Advantages	Disadvantages
Gastro-enterostomy	Simplest in 85% of cases	15% failures—0.7 to 0.9% mortality
Transection with gastro-enterostomy	97 to 98% cures	Higher mortality—? late after results
Uncontrolled diets	Easy way to gain relief	No definite hope of cure—Danger of hemorrhage and perforation
Sippy diet	Most efficient without danger to patient	Inconvenience of following it

The treatment of gastric and duodenal ulcers cannot consist of rule of thumb measures. It requires sufficient knowledge of what the diagnosis and study of a case involves to combat adequately the factors detrimental to the healing of the ulcer. The measures at our disposal for the treatment of gastric and duodenal ulcers can be roughly divided into surgical and medical. The advantages of the former are that they are less time consuming and troublesome. The disadvantages are the operative mortality which occurs and that an increase in operative mortality goes hand in hand with an increase of cures by the different operative methods.

Of the medical treatments the Sippy diet overcomes most efficiently the factors considered to be detrimental to the healing of an ulcer. Its advantages consist of no entailed mortality and adequate control of the situation. Its disadvantage is the amount of time and attention it requires from the patient.

For a certain group of cases such as are encountered in dispensary patients where the close personal contact between physician and patient does not exist, where some patients are too unintelligent to follow out the diet and where some patients have occupations precluding the use of

frequent feedings, surgery probably should be advised. For these patients I advise doing a gastro-enterostomy. Then treat the 15% failures with the Sippy diet. My experience has been that a patient, having had surgery without success, is perfectly willing to follow the Sippy diet.

For the physician treating his own patients the Sippy treatment to my mind is the one which should be employed; for by this method the patient is not subjected to the dangers of operative mortality and theoretically at least is given the best chance of cure.

IODIN HYPERTHYROIDISM*

An Analysis of Fifty Cases

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A SUMMARY of fifty cases of hyperthyroidism induced by the injudicious use of iodine in the treatment of adenomatous goiter forms the basis of this paper. This type of hyperthyroidism has been designated as iodine Basedow, or simply as toxic adenoma, but the term *iodine hyperthyroidism* has been adopted here, as it more accurately describes the disease.

Although the differential diagnosis of toxic adenoma and exophthalmic goiter has been clearly set forth by Plummer and his associates, there is still considerable confusion prevalent in the medical profession concerning the classification and the treatment of the various forms of goiter. This misunderstanding of the basic physiologic and pathologic states of the thyroid gland has resulted in the rather general administration of iodine in the treatment of adenomatous as well as colloid goiter.

Iodine and Goiter. The use of iodine in the prevention and treatment of goiter was suggested by Chatin in the middle of the last century. Bauman's subsequent discovery of the presence of iodine in the thyroid gland gave new impetus to this subject. Cases of hyperthyroidism following the treatment of goiter by iodine became so prevalent that Kocher warned against it. Because in many ways this condition resembles exophthalmic goiter, or Basedow's disease, Breuer called it iodine Basedow. The warning of various observers against the use of iodine and the erroneous association of hyperthyroidism induced by iodine with the clinical picture of exophthalmic goiter brought about a reaction which culminated in the widespread fear of the use of iodine in exophthalmic goiter. The literature contains the reports of many supposed cases of exophthalmic goiter induced by the indiscriminate use of iodine.

This general misunderstanding delayed the remarkable discovery of the efficacy of iodine as an aid to the surgical treatment of exophthalmic goiter. Although isolated reports of the beneficial results of iodine in the treatment of this condition appeared as long ago as 1864 (Trousseau), opinion was so prejudiced that this misconception could not be eradicated un-

til Plummer and his associates proved its fallacy by a large series of cases.

Once the general practitioner heard of the miraculous effect of iodine, the pendulum again swung back with the result that iodine is now administered in the hope of its curing every kind of goiter. Not only is iodine indiscriminately dispensed by some physicians, but it is being freely used by the laity. This state of affairs has been partly brought about by various articles in the newspapers and magazines which advise the people to use iodine to prevent goiter. In some places public health authorities, nurses, and so forth are also urging the general use of iodine. This drug is for sale at pharmacies and the grocery stores. We are getting it in our salt and water and ere long we may expect to have it in our breakfast food. Some of our leading health authorities are behind this movement and are making very enthusiastic claims.

Although I have advocated and am continuing to give iodine in definite amounts in the prophylaxis and treatment of early colloid goiter, I am not too well satisfied with my results. I have one series of at least 100 cases in which iodine has been administered over a period of two years with little or no appreciable effect. Nevertheless, until we find some more positive etiologic factor than iodine deficiency as a cause of goiter, I believe we should continue to administer iodine. The laity, as well as the profession, should realize that any adult who has a goiter and takes iodine does so with considerable risk. I believe that iodine should be dispensed only on the prescription of a physician.

Diagnosis. The series of fifty cases of iodine hyperthyroidism here reported has been observed during a period of three years. The majority of the patients have been seen during the past year, indicating that the condition is becoming more prevalent. Iodine hyperthyroidism, which has generally been confused with exophthalmic goiter and toxic adenoma, is a distinct clinical entity with characteristic clinical findings and a pathologic picture in marked contrast to that of Basedow's disease. It occurs only in persons with adenomatous goiters,

*Read at the meeting of Resident and Ex-Resident Physicians of the Mayo Clinic, Rochester, Minn., October 19-21, 1925.

and although it may occur in children or the aged, it is most frequently observed between the ages of thirty and forty. The average age of the patients in this series was thirty-five years. Tremor, nervousness, loss of weight, tachycardia, loss of strength, and insomnia occur as in the other forms of hyperthyroidism. The onset of symptoms, however, closely resembles that of exophthalmic goiter because of its short duration. In this series the average duration of onset was two months. There is a peculiar characteristic type of nervousness, an extreme restlessness and lack of cooperation often bordering on delirium that in some respects resembles that of exophthalmic goiter.

The loss in weight is frequently rapid and severe. Two patients in this series lost more

than 50 pounds in two months. The variable and often ravenous appetite characteristic of exophthalmic goiter does not occur. Tachycardia is severe and persistent, and in one of the patients who died the pulse did not drop below 175 during the three days the patient was observed. In these cases iodine apparently immunizes the myocardium to the effect of digitalis. It is unlike exophthalmic goiter, as thrills, bruits and exophthalmos do not occur. The gland is asymmetrically enlarged and contains multiple adenomas. The pulse pressure does not reveal the typical low diastolic pressure of exophthalmic goiter but rather closely resembles the findings in toxic adenoma. The same is true of the basal metabolic rate, the average in this group being plus 31 per cent

MEDICAL AND SURGICAL RESULTS IN TREATMENT OF IODIN HYPERTHYROIDISM

Case No.	Sex	Iodin, Age months	Prescribed by	Basal metabolic rate	Loss in weight, pounds	Treatment	Basal metabolic rate on discharge	Gain in weight	
32444	F.	65	3	Physician	+29	10	Thyroidectomy	+ 5	40
32860	F.	28	5	Physician	+17	12	Thyroidectomy	+ 1	24
31732	F.	30	2	Physician	+20	25	Thyroidectomy	+ 4	8
29894	F.	36	3	Physician	+44	29	Thyroidectomy	+10	25
35220	F.	27	3	Surgeon	+22	15	Medical	+ 4	5
33663	F.	53	2	Physician	+29	30	Thyroidectomy	+ 0	50
33275	F.	23	2	Internist	+16	8	Thyroidectomy	+ 4	14
34808	F.	35	2½	Quack remedy	+31	13	Thyroidectomy	+ 8	22
29598	F.	50	3½	Specialist	+46	15	Thyroidectomy	+ 4	18
34592	F.	32	4	Quack remedy	+24	10	Medical	+ 8	12
35087	F.	40	3	Physician	+18	30	Thyroidectomy	+ 4	16
35365	F.	52	4	Physician	+51	50	Thyroidectomy	+ 5	51
35280	F.	52	3	Physician	+30	25	Thyroidectomy	+ 6	24
35351	F.	35	2	Quack remedy	+26	14	Thyroidectomy	+ 3	20
36687	F.	38	4	Physician	+28	8	Thyroidectomy	+ 5	20
36589	F.	28	3	Physician	+28	10	Thyroidectomy	+ 5	13
38914	F.	22	3	Physician	+30	10	Thyroidectomy	+ 6	10
40173	F.	47	2½	Physician	+52	13	Thyroidectomy	+10	25
39915	F.	45	3	Physician	+55	13	Thyroidectomy	+ 0	10
42044	M.	64	3	Quack remedy	+67	51	Thyroidectomy	+ 8	42
42282	F.	38	4	Physician	Too sick	53	Thyroidectomy	Died	
42959	F.	49	4½	Physician	+62	35	Medical	Died	
39042	F.	27	8	Quack remedy	+47	13	Thyroidectomy	+ 2	13
39419	F.	30	2	Druggist	None	5	Medical	—	—
39882	F.	30	12	Physician	+40	0	Thyroidectomy	0	15
41177	F.	41	1	Physician	+20	10	Thyroidectomy	+ 3	10
41288	F.	39	2	Physician	+25	0	Thyroidectomy	— 3	5
40064	F.	49	1	Physician	+18	18	Thyroidectomy	— 8	30
30262	F.	27	2	Relative	+57	16	Thyroidectomy	+ 3	9
41412	F.	14	3	Physician	+24	10	Thyroidectomy	0	16
27035	F.	36	3	Physician	+24	6	Thyroidectomy	+ 7	5
41278	F.	25	4	Physician	+28	8	Thyroidectomy	+ 4	6
40586	F.	14	3	Quack remedy	+46	20	Thyroidectomy	+11	25
31596	F.	16	8	My own	+21	6	Medical	+ 5	6
31106	F.	38	12	Physician	+46	20	Thyroidectomy	+ 7	30
38730	F.	27	2	Physician	+18	5	Medical	—	—
34973	F.	24	3	Physician	+17	No	Medical	—	—
43804	F.	48	3	Physician	+43	30	Thyroidectomy	+10	20
43842	F.	56	4	Physician	+26	15	Thyroidectomy	+ 3	—
44234	F.	46	3	Physician	+20	46	Medical	—	—
44406	M.	66	12	Quack remedy	+19	45	Medical	+ 5	15
45403	F.	54	6	Physician	+35	73	Thyroidectomy	—	40
45250	F.	29	6	Physician	+28	17	Thyroidectomy	+17	—
44680	F.	47	7	Physician	+60	30	Thyroidectomy	0	—
44301	F.	17	7	Physician	+44	25	Thyroidectomy	+ 2	22
46670	F.	23	3	Physician	+38	7	Thyroidectomy	Too recent	—
40704	F.	23	3	Physician	+17	No	Thyroidectomy	+ 5	Too recent
46654	F.	12	3	Physician	+25	14	Medical	Too recent	Too recent
45429	F.	39	7	Quack remedy	+23	15	Thyroidectomy	0	Too recent
35704	F.	65	6	Physician	Too sick	35	Medical	Died	—

as compared with plus 29 per cent in a group of cases of toxic adenoma and plus 54 per cent in a series of cases of exophthalmic goiter.

Etiology and Pathology. Lugol's solution of iodine administered by family physicians was responsible for six of the cases in this series, including the three that terminated fatally. Eight of the patients were treated by the same physician. In seven cases patent medicines were the cause of the development of toxicity. In one of my own cases, a young girl of sixteen, the prompt discontinuance of iodine with rest and sedatives effected a medical cure.

The pathologic picture of iodine hyperthyroidism in no way differs from that of toxic or nontoxic adenoma, but is of course in marked contrast to that of exophthalmic goiter. Grossly, the gland has the typical appearance of an adenomatous goiter containing degenerated, cystic, fibrous and calcareous encapsulated nodules. Colloid may be seen in large amounts. The microscopic picture shows acini of variable size, lined with flat, cuboid cells, and filled with colloid. Fetal acini and occasional small areas of hypertrophic cells are found.

Prognosis and Treatment. Iodine hyperthyroidism has a higher mortality than any other form of toxic goiter. Through the epoch-making discovery of the value of iodine in the treatment of exophthalmic goiter I have recently completed a series of 100 primary thyroidectomies for exophthalmic goiter with no deaths. A similar series of cases of toxic adenoma showed a mortality of 2 per cent. In this series of fifty cases there were three deaths, one of which was surgical. Medical measures may effect a cure when the patient is observed early. Three of the patients here reported were cured by medical means; three died in spite of all medical treatment; and the remainder were cured by thyroidectomy. Operation is frequently performed with considerable risk and may be followed by a stormy convalescence. Patients may remain delirious for days and exhibit an alarming pulse rate. Convalescence is frequently slow as it is in toxic adenoma, and either the iodine or its harmful effect is not eliminated for a considerable time. Every patient in this series who responded to treatment has made an excellent recovery.

WILLIAM CHARLES WELLS OF CHARLESTON AND LONDON*

BY STEWART R. ROBERTS, M.D.

THE name Carolina carries with it an intimation of royal and distinctive grace. With easy memory there comes the lazy sweetness of the magnolia grandiflora, the mellow aroma of the yellow jessamine, the hot heat of the rice fields, the row on row of snowy cotton, the black labor and its lingo, the sultry deep quiet of the half tropic swamp, the coastal plain, the upstate mountains, the intervening rolling country, and with it all something of the pride, the culture and the courage of an ancient and isolated race. The land was first settled by the French in the reign of Charles I and named "La Caroline" after that prince. The English settled it in 1663 by a grant from Charles the Second.

The present South Carolina was formerly included in that vast territory called in the beginning Virginia, and also included in another wide stretch called by the Spaniards, Florida. Anthony Lord Ashley, first Earl of Shaftsbury, "our right trusty and well beloved counsellor," was one of the first grantees. He inspired and Locke wrote the first charter of South Carolina. John Locke, physician, philosopher and author of the Essay on the Human Understanding, was the great Earl's physician who drained his suppurating hydatid cyst of the liver with the famous silver tube of his own invention. The Charter lasted until 1719, when the people of the Province separated themselves from the obedience to the Lord's Proprietors as their

governors, and put themselves under the immediate government of the crown, but from 1670 to 1719 the people were under a body of laws written by a physician whose friendship Sydenham was proud to claim.

Charleston was settled in 1680. It was originally written Charles-town after Charles the Second, and later shortened to the present Charleston. In 1752 the population was about eight thousand, of whom four thousand were colored. Far to the northeast was Virginia, and to the south Oglethorpe's struggling colony of Georgia settled only twenty years before "on that high bluff on the Savannah river." Still further south was St. Augustine, the civil and worse the military headquarters of Spanish America. It was a frontier town in the strictest pioneer way. It fronted the open sea, but it backed against an ancient wilderness full of Indians and wild game and primitive forests. Its struggle for existence was against Indians and Spaniards, disease and the elements. In 1752 there was the great hurricane, which came near destroying the town. Wharves, fortifications, cattle, crops and many people perished. "The pest house in Sullivan's Island, built of wood, with fifteen persons in it, was carried several miles up Cooper river," and nine patients drowned. The town was really covered by the sea. The waters were said to have fallen five feet in ten minutes and passed again out to ocean.

Charleston had been settled chiefly by the

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foreign born English and Scotch. A certain Robert Wells and his wife came over from Dumfries in 1753. Dumfries was an industrial town near Glasgow where was a famous academy and much source of civil and church history. The head of the family entered business and became a merchant of some kind. For some reason "having failed, he took to the business of a bookseller and bookbinder, to which he had been bred when a youth in Dumfries." Later he founded a newspaper, which he owned and edited. "In these new employments both character and ease of circumstances were acquired by him," a double acquisition not claimed by all modern editors. Dr. David Ramsay in his history of South Carolina, writes that "Robert Wells commenced a gazette in 1758, and continued it with great spirit for about sixteen years, and was followed by his son, John Wells, in the same line until 1782." The father was evidently a thrifty Scotchman, full of conviction and much persistence, but rather devoid of tact and humor. As time went on, the spirit that produced the Revolution began to draw a sharp line between the tory Royalists to whom Wells belonged and the Americans loyal to Independence.

William Charles was the fourth child and second son. He was his father's favorite child and was made "to wear a tartan coat and a blue Scotch bonnet: hoping by these means to make me consider myself a Scotchman." He adds: "The persecution I hence suffered produced this effect completely." The child was associated much with the ethiopian sea urchins barnacled to the Charleston wharves, and to whom he laid his habit of swearing, "when my feelings have been agitated, and even sometimes when no excuse of this kind has existed." "I began to show, even in my earliest childhood, an invincible firmness of mind. When my father, who was a passionate man, beat me for a fault, which I was conscious I had committed, I used to entreat mercy most piteously; but if I believed I was in the right the utmost punishment he could inflict would scarcely ever force a tear from me." He beat severely a schoolmate for calling him an improper name, refused to promise the master that under similar circumstances he would not do so again, was himself in turn beaten and locked in his room and yet the next day helped a blind beggar on his way in full view of his school mates and master.

An older brother had been sent to a grammar school at Dumfries and when little Charles was eleven, he was sent across the Atlantic to the same school, where he remained two and a half years. The call of the old home town was evidently strong in his father's heart. In the autumn of 1770 the boy entered the lower classes of the University of Edinburgh and took drawing lessons as well. In 1771 he re-

turned to Charleston and at the age of fifteen years was apprenticed to the famous Dr. Alexander Garden, "the chief practitioner of physic in Charleston." He acknowledges that "my manners from my infancy had always been rude and rough" but he "had always from my earliest boyhood a strong desire to act agreeably to truth." Dr. Garden attempted once to strike him with his hand because of a suspected falsehood. He eluded the blow and "became in my conduct toward him reserved and indignant." I betook myself seriously to study and in the course of the subsequent three years acquired unassisted more knowledge than in any three years of my life."

Robert Wells "found it prudent" to leave the country. He had become offensive to the people "from his constantly maintaining the cause of royalty." This is perhaps what Ramsay meant when he wrote that he conducted his newspaper "spiritedly." William Charles followed him in three months for similar reasons. He arrived in the autumn of 1775 and began at once his "regular medical education" at the University of Edinburgh. He passed his preparatory trials for graduation in the summer of 1778 and returned to London in the autumn, took a course in practical anatomy under Dr. William Hunter, and then became a "surgeon's pupil at St. Bartholomew's hospital three months preparatory to accepting a surgeoncy in a Scotch regiment in the service of Holland." He embarked on this adventure in 1779, soon had his customary personal friction with the Colonel, was confined in garrison, resigned, attacked the Colonel on the street, was carried to prison, released, and in 1780 went to Leyden and there prepared a thesis in Latin,—"de Frigore." Thence he went to Edinburgh, published his thesis and received his degree in medicine.

He was now twenty-four years old. There is next a complete hiatus in his medical life for nearly five years. It could be called "The Strange Adventures of a Strange Young Man." It is as exciting as Treasure Island. An older brother had mismanaged the father's business in Charleston. Our young hero crosses the Atlantic, sends the brother to England to effect a reconciliation with his father, becomes "a printer, a bookseller and a merchant," next an officer of volunteers in the King's troops, next a Judge Advocate in a court martial, next a hurried flight with one printer and a printing press to St. Augustine when the King's troops evacuated Charleston, then the printing of the first newspaper in Florida, then Captain of a troop of Volunteers, then the management of an amateur theatrical company, and he actually went on the stage himself in three plays. The Revolution won, he returns to Charleston to manage his father's failing affairs. There

he was arrested and thrown in prison for three months for a debt his brother owed, again embarked for St. Augustine, was shipwrecked and swam ashore. In May, 1784, he returned to England and in the spring of 1785 spent three months in Paris, more to see the city than to study medicine. He returned to London in mid-summer of 1785, and "had the name of Dr. Wells affixed upon the door of a lodging which I had hired."

Hiring and borrowing were his chief financial experiences for the next ten years. His father was "considerably embarrassed in his circumstances" and there was no help from this expected source. The young Doctor soon found that he "was a good deal unfit for early success in my profession in London" and "in consequence, I passed several years almost without taking a single fee." Finally, an appointment as physician to the Finsbury Dispensary gave him a gratuity of fifty pounds annually and a few rare fees. It was ten years before his income amounted to as much as 250 pounds annually and receipts equalled expenditures "agreeably to the rigid, and almost sordid manner, in which it was conducted." By this time in 1795, he owed 600 pounds, but in the next five years he was enabled to pay off a little of his debt. After sixteen years of practice his income amounted to 307 pounds; after 20 years, 764 pounds. And yet, as he himself writes, "the smallness of these receipts will perhaps appear the more extraordinary when I say that during a greater part of this time, Dr. Pitcairn, and during the whole of it Dr. Baillie, often sent patients to me; and made every exertion to promote my interest." At his death, besides his books, furniture and plate, there was the gold Rumford medal received from the Royal Society and 350 pounds in money.

But "a man's gifts shall bring him before great men" and even if the people had not recognized his ability, his professional colleagues had. The appointment to the Finsbury Dispensary came in 1789. In 1795 he was elected assistant physician to St. Thomas's Hospital, and Physician in 1800. In 1793 he was admitted to the Royal Society of London and 1814 to the Royal Society of Edinburgh. He had been a Licentiate of the College of Physicians, but for reasons chiefly personal, was refused permission for examination for membership both in 1797 and 1798, though he had in his favor the powerful influence of both Pitcairn and Baillie. On Dr. Baillie's subsequent invitation to become a member he refused. In 1799 he printed, "for it was never exposed to sale," his famous letter to Lord Kenyon, Chief Justice of the Court of King's Bench, "A Certain Dr. Christopher Stranger of London," "a physician of eminence in this metropolis," had been refused admission to examination before

the College of Physicians and had gone before the Court of King's Bench praying for a mandamus to compel the College to examine him. The Court refused to grant the mandamus.

Wells uses this case as a basis for discussion of his own case, and not only shows his own fitness for the examination and the inconsistency and unfair rules of the College, but finds opportunity to relate additional facts in his own life, particularly that part spent in America; and to discuss contemporary English medical history and the character of William Heberden, who first described angina pectoris and the nodes of chronic arthritis that bear his name. There was much on Wells' side of the argument. The high courts had three times previously censured and Fothergill and William Hunter had formerly quarreled, with the College; others had refused the honor of membership, and though composed individually of the very choice of the profession since the time of Henry the Eighth, some of its narrow rules and restrictions would intimate that Henry Adams was not far wrong when he wrote that "a friend in power is a friend lost." The College had rare powers. It examined into the qualifications of all physicians in England except the graduates of Oxford and Cambridge, and aimed to permit none to practice except those who were "profound, sad, discreet, groundedly learned and deeply studied in physic."

He began to write at 23. His writings naturally fall into four divisions: (1) His Political writings; (2) His writings on Natural Philosophy; (3) His purely Medical Papers, and (4) His Biographical Sketches. There is his Memoir of himself entitled, "A Memoir of the Life of William Charles Wells, M.D., Written by Himself. A book, 'The Works of Doctor Wells,' 12s., bds., was published in 1818. It was dedicated by the Editor, Samuel Patrick, surgeon, to Matthew Baillie.

1. His first letter was on Mr. Henry Laurens and appeared in the *Public Advertiser* in the autumn of 1780 under the signature of "Marcus." Laurens was a native of Charleston, a wealthy merchant, President of the first American Congress, Congressman from South Carolina, Minister to Holland, and captured by the English on his journey thither and confined in the Tower. Later he was released and with Franklin, Adams and Jay signed the preliminaries of peace which acknowledged the Independence of the United States in 1782 in Paris. Laurens in his will requested of his son that his "body be wrapped in twelve yards of tow cloth and burnt until it be entirely consumed and then collecting my bones, deposit them wherever he may think proper." In 1780 and 1781 in South Carolina, Wells published "many small political things," all unsigned but written at the instigation of the King's

Commander at Charleston, General Nesbitt Balfour. These discussed the question of parole of American military prisoners. These letters were warnings to the Americans on parole not to take up arms against the British government. The famous Colonel Haynes of South Carolina was hanged by the British at Charleston and Wells' warning letters formed the excuse for the crime.

2. His writings on Natural Philosophy:—

(a) An Essay upon Single Vision with Two Eyes; together with Experiments and Observations on Several Subjects in Optics." This was published in 1792. Erasmus Darwin in his *Zoönomia* (Vol. 1, Page 569—London, 1794), differs in minor points with Wells' remarks on Giddiness in his essays. Wells wrote two letters in reply, which appeared in the *Gentleman's Magazine* in September and October, 1794.

(b) His essay on Dew is in some respects the best known of his purely scientific production and gave him a distinct place as a scientist. There had been studies on dew since the time of Aristotle but it remained for Wells to finally elucidate the problem. He did the work alone, chiefly at night, and began his researches in the fall of 1812, at the age of 55,—“a lonely, austere and abstemious man,” already in the fell grip of a failing heart with edema, dyspnea and palpitation. Dr. Lister advised quiet and gave a gloomy prognosis. He immediately set about composing the essay on Dew. It is a post-diagnostic essay written in the midst of a myocardial insufficiency and is as purely a scientific research as the earth affords. The essay covers 159 pages. Wells showed that “the cold which produces dew, is itself produced by the radiation of heat, from these bodies, upon which dew is deposited.” Up to this time dew was supposed to produce and precede the cold of the objects on which it was found.

(c) The last essay covers only thirteen pages and yet as an example of scientific observation and reasoning it is hardly exceeded. Its title explains the case: “An Account of a Female of the White Race of Mankind, Part of whose Skin Resembles that of a Negro: with some observations on the Causes of the Differences in Color and Form between the White and Negro Races of Men.” On page 15 of the chapter, “Historical Sketch,” in the Origin of Species, Charles Darwin quotes freely from this essay and in referring to it says:—“In this paper he distinctly recognized the principle of natural selection and this is the first recognition which has been indicated; but he applies it only to the races of man, and to certain characters alone.” To be the first to give expression to the doctrine of natural selection, on which principle Darwin founded his

theory of evolution, and to receive credit for it from Charles Darwin is an honor to be welcomed by any scientist.

(d) Observations on the Influence which incites the Muscles to Contract in Mr. Galvani's Experiments. (Philosophical Transactions, 1795.)

(e) Observations and Experiments on the Color of the Blood. (Philosophical Transactions, 1797.)

(f) On the Condensation of Water upon Glass. (Annals of Philosophy, Dr. Thompson's, 1816.)

3. His medical papers were all published in the second and third volume of “A Society for the Improvement and Surgical Knowledge,” of which the second volume was printed in 1800 and the third volume in 1812, both printed in London. I have not yet been able to get the first volume or to discover the date of the organization of this little known Society or who its members were. In Volume 2 there are 29 essays and Wells contributed two of these—The 17th, entitled, “Observations on Erysipelas” and the 21st, “An Incidence of the Entire Want of Hair in the Human Body.” The contributions to this volume include some notable medical names, and among them are several fellows of the Royal Society: Blane, Matthew Baillie, Russel, Home, Abernathy and Fordyce.

In the second volume are 34 essays and of these Wells contributed nine. New contributors in this volume include Buchan, James Wilson, Brody, of Brody abscess fame, and John Clark. It is possible that this Society was organized after Wells was refused admission to the College of Physicians, but of this I have been unable to find proof. The first volume may tell the story. The last nine papers have the following titles:

No. 7. A case of Aneurysm of the Aorta, attended with Ulceration of the Oesophagus and Windpipe.

No. 8. A Case of Aneurysm of the Aorta communicating with the Pulmonary Artery.

No. 9. A Case of Epilepsy and Hemiplegia, apparently induced by a sharp Projection from the inner Table of the Skull.

No. 14. A Case of Considerable Enlargement of the Caecum and Colon.

No. 15. On the Presence of the Red Matter and Serum of Blood in the Urine of Dropsy, which has not originated from Scarlet Fever.

No. 28. A Case of Extensive Gangrene of the Cellular Membrane, between the Muscles and Skin of the Neck and Chest.

No. 30. On Rheumatism of the Heart.

No. 33. Observations on Pulmonary Consumption, and Intermittent Fever, chiefly as Diseases opposed to each other; with an Attempt to arrange several other Diseases, according to the Alliance or Opposition which exists

between them, and one or other of the two former.

The only other medical paper was entitled, "Aphasia Spasmodica" and was communicated by Dr. Carmichael Smith, in the second volume of the "Medical Communications."

Several of these are worthy of discussion and others are commonplace, as the one on Tetanus. Four of them stand out as real contributions and show the author as a clinical observer and research student of ability. Number 15 on the dropsy which succeeds scarlet fever, accurately describes the edema, ascites, hydrothorax, scanty urine, convulsions, hematuria and albumen of acute nephritis after scarlet fever. He said there was an acute internal inflammation somewhere but never suspected the kidneys. Number 17 is even a more advanced and valuable paper. It discusses the "Presence of Red Matter and Serum of Blood in the Urine of Dropsy, which was not originated from Scarlet Fever." His phrase "red matter" refers to blood in the urine, and he uses the word "serum of blood" in the present sense of our "albumen in the urine." He discovered that the urine of dropsical patients contains albumen, used the heat and nitric acid tests, found at autopsy the small renal cysts of chronic Bright's, noted that the urine is more abundant than in health, the pale urine, the frequent pulse, the diarrhea, the convulsions, the association with cough and shortness of breath, and in one autopsy remarks that "The kidneys were much harder than they usually are. I do not conclude, however, from these appearances and those which were found in the former case, that the kidneys are always diseased, when the urine in dropsy contains much serum." He studied the urine of 134 patients. Many of his cases are patients with heart disease alone, and he did not separate the renal from the purely cardiac. Wells did, however, connect dropsy and albuminous urine with the morbid anatomy of the kidney and foreshadowed Bright's contributions.

Paper No. 28, "A Case of Extensive Gangrene of the Cellular Membrane, between the Muscles and Skin of the Neck and Chest." This is really a description of the so-called Ludwig's angina or cervical cellulitis. It preceded Ludwig's report by 27 years and is the second report and letter on the subject, the first being by Kirkland in 1786 (V. Dabney). This paper is well worth reading. Wells was so interested in this case that he persisted until permission to hold an autopsy was granted. He speaks of "the repugnance of the relations" of the patient to the autopsy.

Paper No. 30, "On Rheumatism of the Heart," was read in 1810. He here associates rheumatism with heart disease, traces the history of the subject, gives Piteairn and Matthew Baillie the credit for the observation, gives

twelve cases with six autopsies, relates the symptoms that we know today as characterizing endocarditis, and discusses the treatment. Alfred Cohn gives Wells the credit of first discovering the relation between acute rheumatic fever and heart disease. Wells gives Piteairn the credit for the observation, but Piteairn, like Silas of St. Paul fame and association, never wrote anything although the foremost physician of London in his generation. Baillie, the friend both of Wells and Piteairn, mentions the problem in his little book on Morbid Anatomy first published in 1793 and the first work of its kind in the world, as follows:—"On some occasions the heart will become enlarged from rheumatism attacking it."

4. His biographical essays are six in number and were all published in the Gentleman's Magazine at intervals from 1800 to 1813. The life of Mr. Anthony Lambert of Calcutta, of Mr. George Wilson, apothecary of London, appeared in 1800; the sketch of Dr. George Fordyce in 1802; of Mr. John Savage formerly of Charleston in 1804; of David Piteairn in 1809; and of Dr. Andrew Marshall in 1813. This magazine was published from 1731 to 1866 inclusive, and is a source of the history of civilization for that period.

Caesar seemed to have lost all his friends, at the critical moment but Mark Antony, and he was absent. Job had his three friends and they consistently gave him the wrong advice. Even his wife advised him to "curse God and die." It is doubtful if Napoleon had intimate friends in the usual acceptance of the term. Lee and Lincoln had great numbers. Wells claimed only five in all his life. This five-fold friendship was the rare joy of his lonely life, and has conferred a degree of fame and tenderness on his friends, and through his short memoir there runs the recurring strain of intimate association with each of them. The first two of these were David Hume and William Miller. He met them in the autumn of 1770 when he first entered the University of Edinburgh. Hume was the nephew of the great historian and philosopher of the same name who was librarian at the University at this time. Miller was later given the title of Lord Glenlee. Neither of these appear in the National Biography and I have found nothing else about them. After he "fell into the company of Mr. Hume and Mr. Miller and the other young men of superior rank to myself," his "rude and rough" manners became considerably softened. He refers to strengthening his former friendships with them and of writing them regularly.

During his medical course he gained in three years "a third intimate friend, the present Dr. Robertson Barclay." Barclay became a member of the College of Physicians, Gulstonian Lecturer and Harveian Orator, Physician to

St. George's Hospital and Physician to the Princess of Wales.

The fourth friend was William Lister, whom he also met at Edinburgh. Lister graduated in 1781, settled in London, was a member of the College of Physicians, Physician to St. Thomas' Hospital and died in 1830 at 73 from heart disease. He was a classical scholar, a successful practitioner and a noble character. Wells says of him: "My obligations to Dr. Lister are extreme. During the whole of my disease, he has visited me constantly twice, and sometimes thrice a day; and during each of these visits, he has conducted himself towards me, with fully as much kindness as if I had been his brother."

In 1884 he met the most gifted of the five, Dr. Matthew Baillie, whose mother was the sister of John and William Hunter and who inherited the practice of the great David Pitcairn. Baillie was the favored medical son of his day and was born with a gold spoon in his mouth. He spent his vacations in William Hunter's home, helped his uncle in his dissections and teaching, inherited his uncle's fortune; became a great teacher, began to practice in 1786, became a member of the College, received all the medical honors of his day and had a medical income for many years of ten thousand pounds per year. His life is the old story of many gifts, great ability, much popularity, overwork and premature death.

All these friends were men of mind and three of them were physicians. One of his last statements referred to them: "All of these are still in being and from all of them I have received, throughout my illness, the warmest proofs of attachment." He seems to have likewise been fond of a certain James Duns-mure, merchant, and a Mr. Samuel Patrick, surgeon. "Their attentions to me have been most unremitted."

In 1800 at the age of 43 he "was suddenly seized with a slight fit of apoplexy." After several months of convalescence, he returned to work, but never afterwards regained the complete possession of his memory. He became more unfit to follow the train of thought of another person but as fit as usual for his own lines of thought. His father, a paternal uncle, and a younger sister had already suffered apoplectic strokes. "Dreading, however, another attack of apoplexy," he lived abstemiously and took not more food than was necessary for a seven year old child. Most of his literary work was done after his first and only cerebral hemorrhage. In 1812, when 55, "each night's labor fatigued me so much" and "my ankles began to swell in the evening." The failing heart was in evidence. In 1814 he became breathless on slight motion and palpitation began. Having no carriage, he was especially exposed to undue effort. In 1817 violent pains

began at night in the right chest when he lay on that side. Turning on his back, the pains ceased. He could not lie on his left side, for "palpitations and breathlessness." In June, Lister and Baillie diagnosed a right hydrothorax. He died in the evening of the 18th of September 1817, in his 61st year.

One hundred and eight years later this man is still interesting. A thrifty Scotchman, he was always poor; a worshipper of the truth, he was often in difficulty; longing for friendship, he was very lonely; desirous of fame, he avoided people of influence; naturally irritable and easily profane, his few friends attended him with delight; neglectful of female society, he requested that his body be placed in the same vault with his mother's and next to it; he was a learned physician, but the personality that attracted and held patients was lacking; he preferred beatings and jails rather than suffer the miscarriage of his own subjective sense of justice. He was an intellectual with an almost impermeable personality to the common run of men. His great mind and his genius for research carried him beyond the clinical into the realm of physics and chemistry. He was a great physician without patients, a great scientist without a university to nurture him, and a great soul without tact. Had there been in him a quick and surprising touch of humor and some real rubber in his disposition, he might have reached to the heights of a Newton or a Darwin or a Sydenham.

The lesson of his life is plain. With all our intellect, we have our emotions; with all our science, we are still human. The race responds more to personality than to ideas. "There is no darkness but ignorance," there is no life but personality. What really should have come to him never came. He tried to do two things. He could have been either a great scientist or a great physician, not both in a short and unaided life. And yet we are proud of him, thrice geographically proud of him in Edinburgh at his University, in grey old London where he worked, and in Charleston by the sea, his native heath. And we think the world will long remember thee, William Charles Wells.

THE CITY AND THE COUNTRY BOY

DURING the late World War, the pale, thin, perhaps sickly looking young men of the indoor and white collar type from the cities withstood the din, cannon fire, confusion and hardships of trench life better than the robust, pink cheek country lads. The same held true with respect to the great influenza epidemic. The husky, hearty looking country boys, not so immune to the various infections of the cities and camps, fared generally speaking much worse than the city boys.—*Industrial Hygiene Bulletin.*

THE PRESENT STATUS OF OCCUPATIONAL THERAPY IN THE HOSPITAL CURRICULUM*

BY JOHN D. ADAMS, M.D., F.A.C.S.

THE invitation to address you is certainly a very distinct compliment to not only Occupational Therapy itself, but also to the group of people who have worked so assiduously for its interest and development. It is particularly fitting that you, as members of a Society which represents the actual technique of hospital curriculum, should become thoroughly conversant with not only the actual definition, but also the ideals and standards on which we are attempting to develop this work.

It has often been stated that there is nothing new in Occupational Therapy. Its expression represents an old time custom of keeping the patient's mind occupied and diverted, as much as possible, from dwelling upon his or her ailments. In attempting to introduce this new form of treatment, we fully realize that it is bringing into the hospital curriculum a foreign element. By this we mean something which has not been proved beyond question to the medical profession and hospital authorities, to be essentially a medical problem.

The medical profession in its steady advancement along scientific lines has become more and more critical of accepting any innovation or new treatment, unless its position could be substantiated by facts and good results to the patient. The executive personnel of the hospital maintains its present high standard of efficiency by virtue of eliminating from the hospital system all elements which do not contribute to efficiency and scientifically aid the ultimate cure, or personal comfort of the patient.

Occupational Therapy has met with the usual amount of criticism and condemnation, and has passed through the developmental stage which might be likened to the children's diseases, but is now prepared to present facts and figures which, in the opinion of those qualified to express themselves, substantiates its right to occupy its position in the hospital curriculum. Realizing the admirable work of the American College of Surgeons in their attempt to standardize hospitals, we have earnestly worked toward a definite standard in the hope that by so doing we would have no hesitation in bringing this work into the hospital atmosphere in such a way as to have it blend as a contributing factor to efficiency.

In the natural enthusiasm of developing a new work and broadening out our fields of endeavor, it has been extremely difficult, and at times impossible, to have our own workers maintain a definite standard. The very lack or absence of this unified intelligent application

has tendered to delay its introduction into hospitals and its acceptance in general by the medical profession.

Occupational Therapy, as the name implies, is essentially therapeutic in its basic principles; therefore, its very existence and future depend upon its whole hearted acceptance by the medical profession and hospital personnel.

The commercial value of the article produced must be absolutely secondary to the medical value to the patient of performing the work. Early in our work we came to the realization of the necessity of properly trained individuals to apply this treatment. This, as you know, led to the development of several schools throughout the country. It was necessary to standardize the education of these therapists that they might be qualified to become a member of a profession, one that would be in keeping with the high standards of the nursing education, and be in a position to live up to the high standards of present hospital curriculum.

You are all thoroughly acquainted with the history of the war, the splendid record made by the emergency schools organized for the development of occupational therapists, and the tributes paid these girls in their work of reconditioning men and restoring function to disabled parts,—in fact, it might be stated that this very war work so thoroughly impressed many of us who were intimately associated with it, that our efforts to perpetuate it have resulted in its present status.

At present there are two independent schools of Occupational Therapy, the Philadelphia School and the Boston School; and one School in St. Louis connected with the Medical School. There are two departments of Occupational Therapy in colleges, Milwaukee Downer College and University of Minnesota. There are three Occupational Therapy Departments in State Hospitals, Kalamazoo, Worcester and Mississippi. There is a course in Baltimore worked out between the Maryland Institute of Arts and Crafts and the Baltimore Crafts School, and Shepherd Enoch Pratt Hospital. There are post graduate courses at Bloomingdale, Walter Reed and Robert Brigham Hospitals.

With the establishing of the Boston School in our own building five years ago, a definite standard of education was outlined by the late Dr. Herbert J. Hall and myself. This was accepted by the Board of Directors and with very few variations, has continued ever since. This consists of a year of intensive training, totalling 1392 working hours. This is divided into medical, social service and crafts,—1032 hours; hospital field work,—360 hours. All

*Read at Louisville, Kentucky, before the American Hospital Association, October 21, 1925.

applicants must be between the ages of 20 and 40. A high school education, or its equivalent, is the minimum requirement. College graduates are most acceptable but not considered absolutely necessary. It is our desire that these girls should be equipped with a sufficient amount of medical knowledge, that they may intelligently interpret the needs of the patient as well as the proper application of their treatment.

They are given lectures in anatomy, neurology, mental diseases, psychology, tuberculosis, orthopedies, metro-therapy, contagious diseases, syphilis, posture, circulatory system, blind and health conferences, as well as some actual experience, in social service and settlement work. These lectures are contributed freely and generously, without expense, by the leading medical men of the city. Graduates of the school are granted diplomas after the completion of their work, and it is our intention that these girls shall not be entitled to register as therapists qualified to accept paid positions in hospitals, until they have been under intelligent observation in practical work for a sufficient length of time to demonstrate the standard of their work.

A Committee of doctors from the Directors of the School are constantly surveying the school curriculum and suggesting ways and means for improving its efficiency. It is only by this careful surveillance of applicants and pupils that we may hope to so establish in the minds of the medical profession, the thoroughness, scientific principles and intelligent administration of treatment, as to make them acceptable and an integral part of the hospital curriculum.

There has been a successful campaign by the American Medical Association to standardize medical education throughout the country. Why, if we expect to take our place in the medical field, should not we be willing to bear the scrutiny and get the highest possible standards attainable in this work? There are at present approximately 150 therapists in active training in schools throughout the country. We have approximately 764 hospitals in the United States where Occupational Therapy is permanently established, and under the direction of trained therapists. There are many other institutions where Occupational Therapy is being enthusiastically applied, but according to the writer's conception, does not adhere strictly to the fundamental principles and standards which it is our hope to universally establish. This is not offered in the light of criticism, but merely as a suggestion and an appeal to follow some one standard. It is our desire that all treatment applied to patients should be done on prescription by the visiting doctor. We have had the idea expressed in several hospitals, but unfortunately the medical profession has not taken it seriously enough to universally apply this principle. The therapist is the me-

dium of exchange between the patient and the doctor. Her arts and crafts are her medicine cabinet. She should become thoroughly conversant, through consultation with the doctor, as to the needs and requirements in any given case, and the length of time desired for the application of treatment. She alone should be the judge as to when Occupational Therapy had ceased to function as a therapeutic help, and the minute that point has been reached, its application should cease.

Graduate therapists at the present time are equipped with the knowledge and instrument for recording range of motion in joints, but in only a very few instances do we find suitable means for tabulating these. It is especially essential that the therapist should have a graphic representation of the improvement of her cases, especially those where the restoration of function in muscles and joints is the object of treatment.

Post operative and post fracture adhesions present a most admirable type of case for the treatment of Occupational Therapy. The ideal treatment combines physio-therapy with Occupational Therapy. At the Robert Brigham Hospital in Boston, they have divided cases under the headings of active treatment, Occupational Therapy; passive treatment, physio-therapy. This would seem to be a most admirable distribution of cases.

Even its most enthusiastic supporters do not consider that Occupational Therapy is a "cure-all"; it is simply an adjunct in the medical treatment of patients and only applicable to that type of case where restoration of function, either mental or physical, is to be considered.

Orthopedic surgery presents an extremely broad field of activity. Arthritis with its pathological changes about the joint, which in turn produce muscle atrophy through disuse, presents a pathetic and at times, almost hopeless picture in the eyes of the medical man. By the proper use of foot looms and jig saws, joint motion and muscle strength may be increased to the extent of preventing adhesions and helping to restore normal circulation and joint function. This specialty presents many of the so-called incurable type of case, progressive muscular dystrophy, multiple sclerosis, hemiplegia and spastic paraplegia. These cases, although no cure can be effected, may be materially mentally benefited by active muscular effort by occupation in these crafts.

We have several striking cases of chorea that have been benefited mentally and showed rapid progress toward recovery by the application of Occupational Therapy.

In selected cases of infantile paralysis, where muscle training is an essential factor in restoring function to the limb, certain arts and crafts intelligently selected have produced an astounding recovery of function.

Tuberculosis in its many manifestations sup-

plies an enormous quota to our institutional population. Occupational Therapy is being applied to these cases. The results have been admirable in certain types. We hope, however, to so standardize its application as to bring about much better results in the future.

Children supply a tremendously large quota of our patients in the medical world. As yet, no definite plan has been conceived to map out a course of treatment for them. Occupational Therapy does exist at the present time in several children's hospitals, but is based very largely upon the amusement plan. It has no standard of application, has not been scientifically worked out, and at present as it exists, cannot be brought under the classification of Occupational Therapy. This at present is also under consideration and it is hoped that a definite plan of attack for this large number of cases may be satisfactorily worked out. Certainly the crippled child who many times is obliged to lie in recumbency for a period of months and perhaps years, deserves further consideration than the mere treatment of its diseased condition. Perhaps the most excellent work of Dr. John Bryant in his reclamation of the wounded soldiers during the war, carried out in the mental education, teaching the fundamental principles of reading, writing and arithmetic, may be the solution of our problem.

There is no class of cases in the entire range of medicine about which there is quite as much expression of ignorance among the medical profession as in mental diseases. Possibly it may be due to the hopelessness which the doctor feels on entering these institutions. Statistics bring us to the realization of the fact that there is a large mass of humanity which has been relegated more or less to the ash heap and there has been an utter lack of proper consideration and appreciation of the splendid efforts of psychiatrists and specialists along this line. In the United States alone there are 147 such institutions for the treatment of the mentally deficient. These house a total population of 232,680, there being an annual admission rate of about 60,000. The cost of maintenance in these cases is simply appalling in its figures.

Dr. James V. May, an eminent psychiatrist, who has recently written a splendid work entitled "Mental Diseases," dealing with all phases of the treatment of these individuals, states that "Occupational therapists who devote their entire time to stimulating the interest of the patients who cannot leave the wards on account of their mental or physical condition, in some absorbing and diverting occupation, are an important part of the personnel of every institution. No other form of treatment employed in Hospitals for mental diseases has been so productive of results. It

has been especially applicable in strictly reëducational work in dementia praecox."

Occupational Therapy was used more or less in the hospitals under the New York State Hospital Commission System before 1922, but not systematically organized. In July, 1924, a Director of Occupational Therapy was employed with an appropriation of \$13,000 for salaries alone. Early in May the appropriation for salaries of Occupational Therapists for this year up to June, 1926, was fixed at about \$117,000. At that time over ten thousand patients in State Hospitals for mental diseases were being given Occupational Therapy on physicians' prescriptions. This is certainly a fitting tribute to state aid and should be an example for other states to follow.

The present State Program in New York begins with so-called habit forming classes. These represent the type of mental case that has utterly lost his sense of personal hygiene. They are taught orderliness about the ward, cleanliness in their personal appearance, the main object being to keep them occupied and busy.

The second class is the kindergarten grade. In this group habit training, with much less supervision is carried on. These cases are taught to do even the simplest forms of sorting out yarn.

The third class is the so-called ward class. From here they are promoted to occupational centers outside of the hospital ward. These rooms have equipment suitable for teaching weaving and some of the concrete crafts.

The fourth class is the pre-industrial shop. This is the last step where some of the patients are trained for parole and others for hospital industry such as printing, book binding, furniture construction, etc.

This entire system is therapeutic in its application. There is absolutely nothing commercial. Only a very limited amount of these goods are sold to meet some of the expenses of upkeep. None of the articles made from materials supplied from the State budget are sold. All this work is essentially non-vocational.

A great deal of stress is laid upon physical exercise. In one institution in New York State where 2200 inmates are receiving Occupational Therapy, there are five instructors in gymnastics. Folk dancing is taught to introduce a sense of rhythm into the patient's mind. It has been found that activity in these patients tends toward a certain mental coordination and appreciation of their surroundings.

Occupational Therapy is applied fundamentally to relieve the mental institutions of that large group of rocking chair patients who sit twirling their thumbs or making hieroglyphic character markings on their clothes in an aimless demented sort of way. These cases when carried to the highest point of efficiency, make a great deal of the hospital furniture, rugs,

and supplies, therefore reducing materially the cost of their maintenance. It therefore has served to segregate the patients according to their standards of mentality and helped to grade them according to their intelligence. No attempt has been made to cite individual cases, of which we have many, where apparently hopelessly mentally insane individuals have been taught to become productive individuals. There is no need for me to portray to you the long tedious weeks of training necessary to bring this about.

In this rather superficial analysis of our present status, it would seem that this Society considers our work worthy of serious consideration, and that our future depends largely upon your coöperation and support. Financial problems are always paramount in the successful culmination of any mental effort.

Our present graduate therapist receives a salary of from \$80 to \$100 a month and maintenance. This would appear to be rather a large amount to add to the present budget of your hospital curriculum, but there are always ways and means in local communities for raising funds to meet such emergencies. Influential members of the community should organize and through their influence bring pressure to bear upon the legislative members of such a community, impressing upon them the importance of Occupational Therapy, and if possible, through their influence, the establishment of a state director may be brought about. This, in my opinion, is the key note of success, as in her state-wide administration she may bring influence to bear in the smaller communities.

installation of the Occupational Therapy into the State Institutions and correlate all of the necessary agencies to bring about a successful issue in that state.

A record system has been emphasized very strongly and it is an absolute essential if we are to form the integral part of the hospital curriculum. An appeal has already been made to the American College of Surgeons to supply us with a suitable blank which shall be in keeping with the present records, that the therapist may register the daily progress of the patient in charge.

Any attempt to emphasize the therapeutic value of Occupational Therapy has not intended to discourage the splendid work being done in prevocational and vocational work among the permanently handicapped. This class of case deserves the utmost consideration and presents a problem one step further than Occupational Therapy, and it is the sincere desire of all members of the American Occupational Therapy Association and local organizations to coöperate in every way possible in this work.

The term Occupational Therapy is confusing. It is one of the outcomes of the recent war and is very difficult of comprehension by the lay mind. It seems, however, to express the meaning of our work better than any other term applied. Accepting this, it is our duty to so standardize the various sub-divisions of rehabilitation work as to make them clear in the minds of the people to whom we are looking for support, in that they may intelligently give their help.

NEW ENGLAND SURGICAL SOCIETY

REPORT OF A CASE OF VOLKMANN'S CONTRACTURE INVOLVING THE PRONATOR QUADRATUS*

BY JAMES S. STONE, M. D., F.A.C.S.

FRACTURE of the radius and ulna in the lower third of the shaft is a common injury among children. When there is a displacement of the fragments reduction is usually difficult, because if one bone is intact satisfactory manipulation of the other is hindered, and if both bones are broken one is apt to slip out of place while the other is being manipulated. The small size of both bones at the ordinary point of fracture about a couple of inches above the wrist makes it probable that the fragments will over-ride about a third of an inch.

In the days before the X-ray showed this over-riding it was of course very frequently overlooked. At first the swelling and later the callus obscured the deformity and in time nature smoothed out the irregularities. The results were

perfectly satisfactory. Nobody knew the true conditions.

Modern methods demand more perfect anatomical restoration with perhaps at times the risk of impaired function. Open reduction is often considered absolutely necessary where any over-riding persists yet X-rays taken a year or two later in similar cases not reduced showed absolutely no trace of any fracture or deformity and function is perfect.

In attempts to secure good position of fragments and still avoid open reduction the temptation is great to trust to padding of splints and the use of considerable pressure. Ordinarily no harm results but because of the possibility of serious damage the following case is reported.

A boy of six years broke both bones of the forearm three years ago. Two distinct attempts

*Read at the annual meeting in Springfield, October 2, 1925.

at reduction under ether were not wholly successful and it was necessary to apply marked pressure on the anterior surface of the lower forearm to maintain satisfactory position. A small pressure sore followed over the flexor tendons. After the splints were removed the position was excellent, the use of the hand and wrist became perfect but it became absolutely impossible to supinate the forearm. Several attempts to secure supination by forcible manipulation had been unsuccessful. The forearm quickly went back into extreme pronation.

When seen about two years and a half after the accident the sole difficulty was the absolute loss of supination. The forearm was held so rigidly in extreme pronation as to suggest a bony ankylosis between the radius and ulna or at least a bony deformity. The X-rays showed practically nothing abnormal. The diagnosis was made by the history, the pressure scar and the absence of bony deformity. An incision was made at the anterior edge of the ulna just above the wrist. By lifting the ulnar nerve and flexor tendons forward the pronator quadratus was exposed and the tight fibrous muscle was cut across near its origin. The forearm could then be supinated and it was put in a splint in this position. Later a splint was worn at night for several months. Active exercises which compelled supination were used. The final result is a restoration of supination to about two thirds the normal extreme.

Without wishing to be misunderstood as advocating careless methods in the treatment of fractures it is only fair to remember that even when both radius and ulna over-ride a little, union will soon be firm, function after a few weeks will be perfect and in a couple of years the X-ray will show no deformity which can be detected. And we must remember that even a deep seated muscle like the pronator quadratus protected by the great mass of flexor tendons may be deprived of its blood supply by a pressure which is transmitted through the tendons but does them no harm.

DISCUSSION

DR. JAMES W. JAMESON, Concord, N. H.: In this connection I should like to report an interesting case of Volkmann's paralysis which I saw about twelve years ago. This man was struck in the wrist, by a fragment from an emery wheel, which burst while revolving at high speed, receiving a fracture of his radius and ulna. Splints were applied by his physician and were so tight that he suffered a great deal four or five days until they were loosened, at which time the fingers were greatly swollen. I saw him at the Presbyterian Hospital about six months after the injury and at this time he had a typical claw hand with inability to move his fingers, his fracture had united, there was some bone atrophy, and a thickening of the flexor tendons about the wrist.

Upon operating I exposed the flexor tendons in the lower third of the forearm and found them to have been changed to a solid mass of yellowish fibrous tissue in which it was impossible to differentiate them. However by separating the muscle above I was able to cut the fibrous mass into the proper number of tendons. After this was done the fibrous bands were rubbed with a combination of paraffine, wax and albolene which was a semisolid consistency, and the skin closed over them. His fingers were put up with rubber bands for extension, and active and passive motion was given daily. In about six weeks he began to have some voluntary power in his fingers and at the end of four months he had a very serviceable hand although his grip was weak.

Volkmann's paralysis most often occurs where tissues have been traumatized and kept under tension, this condition usually occurring after tight splinting of fracture. With more loosely applied splints and early massage we ought to see fewer and fewer cases.

DR. JAMES S. STONE, Boston (closing): I do not want the impression to go out that the early removal of splints will prevent Volkmann's. The point to emphasize about Volkmann's contracture is that pressure upon a muscle or any other interference with the blood supply of a muscle for a period of a very few hours—something like three to six hours—will lead to the permanent degeneration of that muscle. It is a matter of a few hours only of deprivation of the blood supply before a muscle is destroyed. This does not mean that every muscle fibre degenerates, but many of them do. Those damaged degenerate into fibrous tissue, which contracts and squeezes other fibres, producing an interstitial myositis. The first night after the injury is the dangerous period. We see a distressing number of these Volkmann's contractures in the Children's Hospital. Children have trouble more frequently than adults because, I believe, adults do not submit to the amount of pain that the children are compelled to bear. Adults rip off too tight bandages.

The case reported is mentioned because of its rarity, the only muscle affected being the pronator quadratus. Flexion and extension were normal—everything except supination. The forearm was held in pronation by the contracture of the pronator quadratus and nothing else.

THE WORLD'S CHILDREN

CHILDREN'S CLINIC, JOHNS HOPKINS

A weekly clinic for children with heart disease will be opened at Johns Hopkins Hospital, Baltimore, according to the director of the hospital. This is the fourth clinic in connection with the children's free dispensary.

PREPARATION OF PATIENTS FOR ANAESTHESIA*

BY HORACE P. STEVENS, M.D., F.A.C.S.

I SHOULD hesitate to present before this society a subject of this sort, were it not one, which, to say the least, receives only perfunctory consideration in the general run of surgical cases. It is perhaps natural that, in the press of greater problems, this matter should occupy a minor place, yet everybody recognizes how much a smooth untroubled anaesthesia means, not only to the immediate comfort of both the patient and the surgeon, but also toward an uncomplicated convalescence. So, if not surprising, it is at least unfortunate that the great majority of anaesthetics should be undertaken under "standing orders," or, at best, under a routine method that gives little thought to the individual needs of the case.

The various procedures in preparation for anaesthesia, are all directed toward getting the patient into the best possible physical, and mental condition before anaesthesia, and preventing, as far as possible, the undesirable after effects of the anaesthetic drug. All this is, of course, but a part of the general preoperative preparation, and is closely wrapped up with all the questions of operative method and technic, such as prevention of shock, etc., but in this paper, I shall aim to keep within that part of the subject which is directly concerned primarily with the anaesthesia.

At first sight it might seem best to delegate this part of the preparation to the anaesthetist, and doubtless this would be true if the anaesthetist could have the opportunity to become familiar with all the facts of each case, and to thoroughly know his patient. This, however, is not as a rule practical. Usually the anaesthetist comes in at the last minute, a stranger to the patient, and knowing only as much about his condition as the surgeon has felt he must tell him.

One of the chief objects at which we are aiming is the mental well being of the patient. That the more completely his mind can be at rest, and the more cheerful his viewpoint in approaching his anaesthesia the better he will do is obvious. One of the jarring notes to this complete harmony is the comparative strangeness of the anaesthetist, and it is distinctly worth while to overcome this as much as possible. If the anaesthetist is known to him personally or by reputation it is a great help and this is an argument in favor of the anaesthesia being given by the family physician, when such a course is practical. However, the time is long since past when we can subscribe to the idea that anyone can give an anaesthetic, and, ex-

cept in the rare instances of general practitioners who have acquired real skill in this art, and then only in simple uncomplicated cases where ether is the drug of choice, the services of a trained anaesthetist should be employed. If the anaesthetist is unknown to the patient it is well worth while to make a point of singing his praises a bit. It does no harm to tell the patient that he is lucky to have obtained the services of Dr. A, who, is one of the leading men in his specialty, but it is wise to make sure of Dr. A before making these statements, for patients, especially women, who have been brought up in their daily marketing on such slogans as "Accept no substitutes" and "None genuine without our trade mark," do not take kindly to a last minute change.

The selection of the time for operation, except of course in emergencies when one has no choice, is worthy of consideration. In general, once an operation has been decided upon, the sooner it is undertaken the better for the patient's peace of mind, but some people unquestionably do better for a few days rest in hospital beforehand. In this detail, as in others, the needs of the individual must be studied.

It is unnecessary to stress the importance of pleasant surroundings and a cheerful atmosphere but this must be natural and not overdone. I have seen before now not a few instances where this air of cheerfulness has been so forced, and laid on so thick, that the effect has been positively funereal.

Once the patient has been sent to the etherizing room anaesthesia should be started without delay. The efforts of house officers and nurses to effect a military snap and precision to the way the service runs is apt to breed in us an intolerance of delay without regard to the patient's comfort. How often patients are hustled on to a truck and rushed to the operating room and then subjected to a tedious wait, lying on a hard table amid the confused sounds of preparation, just so that we may not be kept waiting a few precious minutes. This sort of thing cannot help having a bad effect and is easily avoidable.

The importance of a careful physical examination, as far as the subject of this paper is concerned, is chiefly to determine the existence of any abnormal condition which might affect the choice of the anaesthetic method or drug. If such a condition be present the type of anaesthesia should be decided upon after consultation with the anaesthetist. In connection with the subject of physical examination just a word in regard to blood pressure. In many hospitals it has become routine to take the blood pressure

*Read at the annual meeting in Springfield, Mass., October 2, 1925.

at the time of entrance to the hospital, or just before starting the anaesthesia. At both of these times, especially at the latter, in the great majority of cases, the blood pressure is considerably elevated, so that readings at this time may be distinctly misleading. I know of one hospital that has a rule which requires the blood pressure to be taken and recorded just before the anaesthesia is started. Such a routine is not only of no value, but is just another source of annoyance to the patient at a time when every effort should be directed toward his peace of mind.

Physical preparation includes attention to cleanliness and the eliminative functions. The mouth and upper respiratory tract may well receive care, but the old time rite of removing false teeth had best be omitted. They do not form a menace during anaesthesia, nor are they themselves in danger at the hands of a careful anaesthetist, and by preserving the normal contour of the lips and cheeks they greatly aid the administration of the anaesthetic. Gastric lavage is valuable and even imperative in selected cases but should not by any means be routine, although its use at the end of anaesthesia might well be more general.

Reasonable evacuation of the bowels is desirable but drastic purgation is not only unnecessary but harmful. The days of preparatory castor oil and calomel are gone and nobody regrets their passing. Simple cleansing enemata are sufficient in almost every case, unless the nature of the operation requires something more effective. The value of forcing fluids cannot be overstated and every effort should be made to have the kidneys functioning at their highest efficiency.

The subject of diet chiefly concerns us in the matter of prophylaxis against acidosis in the production of which condition, anaesthetics, particularly ether, have a hand. For this a diet rich in carbohydrates and low in fats is desirable, augmented by a reasonable amount of alkalis and glucose in some form, particularly before prolonged etherizations, and in operations, such as those about the gall bladder, which are more commonly followed by this condition.

In general and spinal anaesthetics the stomach should be reasonably empty, hence the so called ether breakfast which is a euphonism rather than a meal, but local and regional anaesthetics I believe, do better if they have an ordinary light breakfast about two hours before operation.

Morphine and atropine are the two drugs par excellence in preparation for anaesthesia. Cases showing any degree of myocardial weakness should receive a preliminary course of digitalis, and in spinal anaesthesia, caffeine may be used to advantage to combat the marked drop in arterial tension that accompanies this method. The ef-

fect of caffeine reaches its maximum in about three hours and when used the drug should be given that long before the start of the operation. Insulin is of course of great value in diabetics when indicated, but it should not be used indiscriminately and without complete understanding of its action.

Scopolamine is much favored as a preparatory drug especially in local and regional anaesthesia. It is, however, so uncertain and variable in its action that I find I am depending on it less and less. A given dose may work to perfection at one time and at another time in the same patient produce such marked excitability as to ruin a perfectly good local anaesthesia and make necessary resort to ether or gas oxygen. If the technique of the anaesthesia is good I doubt if its use is necessary, and its unreliability, in my hands at least, more than counterbalances its advantages.

Morphine is a valuable aid in all forms of anaesthesia. It produces a comfortable lassitude upon which anxiety and impatience have little chance to intrude and in alcoholics, athletes, or plethoric individuals it lessens the tendency to breath holding or deep breathing during the early stages, with consequent lessening of the danger of over dosage of the anaesthetic. It lessens the amount of anaesthetic, shortens the time to complete relaxation, dulls the stage of excitement, and lengthens the period of quiet after operation. Its use is contraindicated in very old or very young patients, where an idiosyncrasy is known to exist, in nephritics or others with lessened kidney function, and in cases where an unimpaired activity of reflexes is desirable.

Atropine tends to counteract the bad effects of morphine, and produces a dryness of the respiratory tract especially desirable in inhalation anaesthetics.

Morphine and atropine should be given together in suitable doses to meet the needs of the individual. The dosage of these drugs should never be made routine. "A sixth and a hundred and fiftieth" may hit a certain number of patients right, but in many others it will be too large or too small and in either case, the results will not be satisfactory.

It is of the first importance that they be given long enough before anaesthesia is started to take effect and the results are unquestionably better when they are given in divided doses. It has been my practice to give one half of the estimated proper dose an hour and a half before the time appointed for operation. One hour later this dose is repeated or may be increased or diminished as needed. In this way the sleepy indifferent state of the patient is lengthened out, full effect of the drugs is assured, and more accurate dosage can be obtained from observation of the action of the first dose.

After the first dose has been given the patient should be kept in bed and undisturbed. All physical preparations should be finished before this, and visitors should be sent away, and when it is time to go to the operating room he should be moved as quietly and easily as possible on a truck, never in a wheel chair, or on foot.

I appreciate that this paper presents nothing new or original. It is merely a statement of commonplace facts familiar to you all. My only excuse for offering it, as I said at the beginning, is that these matters are so often relegated to routine standing orders, and to plead for their more individual application.

DR. LYMAN S. HAPGOOD, Cambridge, Mass. (By invitation.) Dr. Stevens' admirable paper on this most important subject of preparation leaves little to criticize or add to, so in opening this discussion I will merely try to emphasize certain points which he has already covered so concisely. For a number of years I have been trying with more or less success to break away from the pernicious, so called *standing order* for preliminary medication. I thoroughly believe that in the vast majority of cases morphine and atropine add to the comfort and safety of the patient, but I certainly do not subscribe to a fixed routine dose; for every case. The dose should be carefully estimated in each individual case and given in plenty of time before the operation, in order to get the desired physiological effect *before* the anaesthesia is started. In my experience the divided dose, as Dr. Stevens suggests, given an hour and one-half and half an hour before operation gives far better results than a single large dose twenty minutes or half an hour before operation. Twenty minutes is too short and most of our early anaesthesia troubles, arrest of respiration, shallow breathing, etc., are due to morphine given just before the patient is brought to the operating room.

Another point I will mention is the place where the anaesthesia is started. Most of our better private hospitals have special etherizing rooms away from the noise and confusion of sterilizing rooms, doctors' scrub rooms, etc. This is as it should be, yet in some of the smaller private hospitals, around Boston at any rate, the patients are brought into the main operating

room, dumped on a table amid stands of instruments, electrical apparatus, blinding lights, nurses gowned and masked like ghosts, and doctors half dressed, rushing in for gowns and gloves. This is poor hospital technique.

In one place the acoustics are such that the etherizing room would seem to be at the end of a big megaphone and the voices of doctors discussing medical subjects, the pouring of bags of instruments on tables and getting pans and basins out of the sterilizer makes a combination like a baseball game and a boiler factory.

One special class of cases I should like to speak of in closing, and that is the middle-aged patient who comes in for tonsils. A lot of this work is being done nowadays to remove foci of infection in cases of arthritis, rheumatism, neuritis, etc., and many of these cases are not the best of risks. Tonsils in an adult usually with other pathology is to my mind a serious major operation, and yet in my experience, they are the poorest prepared cases.

How often do we go to an appointment and find the patient just arriving or perhaps not even in the hospital. These cases, when they do come, are hustled into a room, undressed in a hurry, rushed to the operating room and arrive wholly unfit, both mentally and physically for the ordeal. They take a stormy induction, are usually half drowned in mucus and saliva and the chances of inhalation pneumonia, hemorrhage and shock, are increased.

I believe these cases should all go to the hospital the night before, or if that is impractical, at least three hours before the time set for the operation.

Although many do not approve of morphine in nose and throat work, I believe that a small dose of morphine and full dose of atropine, given at least one hour before operation, in the case of an adult, adds to the comfort and diminishes the risk in this type of case.

After all, it may not be the omission of any one of the details which Dr. Stevens has brought to our notice that makes any very great difference, but the sum total of all of them carefully considered and accurately carried out must raise the average of successful surgical procedures tremendously.

MEDICAL PROGRESS

PROGRESS IN PEDIATRICS

BY JOHN LOVETT MORSE, M.D.

In pediatrics, as in other branches of medicine, it is very difficult to know what is really progress and what is simply new and different. Much that is supposed to be new, moreover, is really old. Furthermore, the fact that a thing is different does not, by any means, prove that

it is any better than the thing from which it differs.

SCARLET FEVER

Real progress has been made, however, in the prevention and treatment of scarlet fever. So

much has appeared in the BOSTON MEDICAL AND SURGICAL JOURNAL during the past year regarding scarlet fever that it is hardly necessary to review the subject again in detail. The possibility of conferring prolonged and permanent active immunity by injections of toxin does not seem as positive as it did a year ago (Park, *Journal American Medical Association*, LXXXV, 1180). It is certain, at any rate, that larger doses must be used than were previously considered sufficient. There is a general agreement that the scarlatinal antitoxin, in proper amounts, is a specific in uncomplicated scarlet fever, that it indirectly benefits complications during the acute stage and that it has no therapeutic value in post-scarlatinal sepsis. All agree that, as in diphtheria, a sufficient dose should be given immediately to make and keep the fluids of the body antitoxic. A second dose should not be necessary, but should be given if the temperature rises again after the drop. The size of the dose should be influenced by the weight of the individual and the severity of the individual case. It should be given intramuscularly in moderate cases and intravenously in severe and toxic cases. There is some doubt as to whether it is advisable to give it in mild cases, because, until the serum can be concentrated more than at present, the serum sickness, which often follows it, is more annoying than the original disease. There seems to be much difference of opinion as to the dosage to be used, some authorities recommending as little as 20,000 skin test doses and others from 300,000 to 1,200,000 skin test doses. Much is to be learned, therefore, not only as to the size of the dose necessary for the production of active and passive immunity but also as to that for the treatment of the acute disease.

INFANT FEEDING

Numerous papers have appeared regarding the use of acidified milk in the feeding of infants, both sick and well. Most of them deal with buttermilk or with mixtures acidified with hydrochloric acid or lactic acid. Hess and Matzner (*Journal American Medical Association*, LXXXII, 1604) used lemon juice for the acidification of milk in preference to other acids, because of the antiscorbutic vitamin which it contains. They used a mixture of two-thirds milk and one-third water, with an acidity of Ph3.3, and obtained satisfactory results. Green, Withington and Friedman (*BOSTON MEDICAL AND SURGICAL JOURNAL*, CXCII, 588) used milk mixtures acidified with lemon juice at the Boston Floating Hospital during the summer of 1924, as well as other forms of acidified milk. In general, their results were quite satisfactory with this form of acidified milk. Not infrequently, babies took it readily when they objected to other forms. Dunham (*American Journal Diseases of Children*, XXIX, 200) used dilute acetic acid in

the form of ordinary household vinegar, adding one ounce of vinegar to fifteen ounces of cow's milk, which equals one teaspoonful of vinegar to three ounces of milk. This gives a hydrogen-ion concentration of about Ph4.2. He added one half ounce of corn syrup to the pint. Forty infants fed in this way did well. He believes that the clinical results of vinegar milk compare favorably with those of other types of acidified milk. Points in its favor are economy, easy usage and safety. The acetates which are formed are readily absorbed from the intestine and, hence, have less laxative properties than citrates and lactates. They do not inactivate calcium and have no poisonous ion action on the blood stream. These feeding experiments are interesting in the light of our former beliefs or superstitions that it was dangerous to take acid fruits and vinegar at the same time as milk.

Numerous attempts have been made to explain the apparently favorable action of acidified milk mixtures. No conclusions of any real value have, however, been reached, most of the evidence obtained being negative. Schiff and Gottstein (*Jahrb. f. Kinderh.*, CVII, 99) found that acid milk did not make the duodenal contents acid. When neutral food was given they were acid; after acid food the duodenal contents were alkaline. They concluded that the therapeutic value of buttermilk in nutritional disturbances associated with diarrhea does not depend upon its power of killing the *B. coli*. Müller (*Ztschr. f. Kinderh.*, XXXVIII, 705) found, as have others, that the gastric secretion after acid is added to cow's milk is approximately the same as with human milk. Pepsin secretion runs parallel with the gastric secretion. Hydrochloric acid added to cow's milk increases the fat splitting in the stomach. He decides that the favorable antidyseptic action of acidified food is probably due to improved gastric digestion. He thinks that the protein of acid soured milk is digested better than that of buttermilk.

COW'S MILK VS. GOAT'S MILK

Daniels and Stearns (*American Journal Diseases of Children*, XXX, 359) made a comparative study of the calcium, phosphorus and nitrogen balances in infants fed on cow's and goat's milk. The urinary phosphates in all infants receiving goat's milk were higher than during the periods when they were receiving cow's milk, even though the phosphorus ingested was no higher in the goat's milk than in the cow's milk. The calcium and phosphorus balances did not indicate that the inorganic moiety of goat's milk was superior to that of cow's milk. The ratio of phosphorus to calcium retained on goat's milk does not suggest that it is better than cow's milk. Considerably less nitrogen was retained in all instances on goat's milk than on cow's milk. Their re-

sults seem to show that there is very little basis for the statement that goat's milk is better for babies than cow's milk.

ETIOLOGY OF NUTRITIONAL DISTURBANCES

Marriott, in a paper entitled "Further Observations Concerning the Nature of Nutritional Disturbances" (*American Journal Diseases of Children*, XXX, 577), points out the apparent etiologic relationship between infections of a special type and the severe nutritional disturbances characterized by profuse watery diarrhea, prostration, rapid loss of weight, failure to retain fluid even when given in large amounts, a gray color of the skin and acidosis. Complete necropsies on a number of infants suffering from this type of disturbance revealed streptococcus infection of the mastoid antrum. He calls attention to similar observations made by Renaud, Byfield and Floyd.

In a group of twenty infants suffering from the symptoms described, the mastoid antra were opened under local anesthesia and streptococcus pus was obtained in all. The operation caused but little disturbance. In a large proportion of the cases there was almost immediate relief of the symptoms. The usual local signs of mastoid involvement, such as swelling, redness and tenderness, were absent. The tympanic membrane showed some change in all cases, however, and there was always a sagging of the posterior superior wall of the canal near the junction with the tympanic membrane. He admits that it is possible that a mastoid antrum infection may clear up without operation, but believes that, in many young infants, the anatomic conditions are such as to render adequate drainage impossible. In consequence, infections remain active in the mastoid antrum despite free opening of the drum. Infections of the antrum with organisms other than the streptococcus do not give rise to the same general symptoms. He thinks it probable that the streptococcus toxin exerts a specific action on the capillaries of the body in general and of the intestinal tract in particular, which results in the hydrolability which is so characteristic. He found the most successful dietetic treatment to be a high calorie diet of undiluted lactic acid milk to which fair amounts of corn syrup were added. Any considerable restriction of the diet should be avoided.

In the discussion of this paper it was brought out that a large group of nutritional disorders depends on food disturbances and another on enteral infections. The diarrheal diseases, which occur in the summer, are not due, for the most part, to parenteral infections. The great danger of exaggerating the importance of mastoid infections in the etiology of infantile diarrhea was brought out, and the consequent danger that many mastoids would be opened unnecessarily emphasized. The dangers of op-

eration on the mastoid were also emphasized. It was also brought out that the symptoms described are most unusual in mastoid infection secondary to acute otitis media, even when the infection is with the streptococcus. The difficulty in differentiating between cases of diarrhea due to mastoid infection and those not due to it was brought out, as was also the fact that the Roentgen-ray is of much less value in the diagnosis of mastoiditis in infancy than it is later.

INSULIN IN THE TREATMENT OF MALNOURISHED INFANTS

Tisdall, Brown, Drake and Cody (*American Journal Diseases of Children*, XXX, 10) undertook their study because of the favorable results reported by Pitfield, Marriott and Barbour with insulin in the treatment of malnourished infants. Their work was more careful than that of others in that the blood sugar was estimated. Nine infants were given insulin in conjunction with the intravenous injection of twenty per cent. glucose. Seven infants, over a total of thirteen periods, received insulin in conjunction with fifteen per cent. glucose subcutaneously, two infants in conjunction with ten per cent. glucose subcutaneously and six infants in conjunction with the feeding. There was a definite increase in the weight in fifty per cent. of the cases. In many instances, however, other factors were present, which lessened the probability that insulin was the cause of the increase in weight. They conclude that no positive evidence has been obtained that insulin, per se, when administered with carbohydrate to malnourished infants produces any beneficial effect. Their work shows how careful one must be about accepting enthusiastic reports as to the beneficial results of new forms of treatment.

They found that insulin apparently produces the most marked diminution in the elevation of the blood sugar, when administered about one and one half hours before the glucose. The effect of insulin on the blood sugar concentration varied tremendously in different infants. Consequently, its administration is not without danger. Certain infants may have a very marked hypoglycemia without showing any hypoglycemic reaction.

ICTERUS NEONATORUM

Van Creveld's paper (*American Journal Diseases of Children*, XXX, 240) is most convincing to those who have tried to understand and keep up with the various theories as to the etiology of jaundice in the newborn. He comes to the conclusion, from a review of the literature on the subject, that the explanation of the cause of icterus neonatorum, which is well grounded and sufficiently supported by experiments, is still far away. Aside from some

irrefutable and important facts, there is still much contradiction between the results of the researches of different workers. There is apparently no justification for assuming a connection between certain theories. He believes that much further study is necessary before any positive conclusions can be reached. (Fortunately, we can wait a long time for a positive explanation, because the condition is a harmless one.)

ACRODYNIA

Bilderback (*Journal American Medical Association*, LXXXIV, 495) reviews the literature on this condition and gives a very good description of the symptomatology and laboratory findings. He states that the etiology is unknown, but that it certainly is not a deficiency disease. He believes that the condition which is now called acrodynia in the United States is not the same disease to which the name was given in France one hundred years ago and, therefore, thinks that it is not a good name for it. He is inclined to think that it is a new disease in the United States. He thinks that the evidence shows that it is an infection or the aftermath of one. At any rate, infection of the upper respiratory tract is a common symptom. Thousands of children have, however, an upper respiratory tract infection without acrodynia. It is not secondary to influenza.

Rodda (*American Journal Diseases of Children*, XXX, 224) also reviews the literature and symptomatology. He also says that the etiology is not yet clear, but that it certainly is not due to a deficiency in diet. There is much proof clinically that acrodynia is the result of a chronic intoxication from upper respiratory infections. Whether it is the result of a specific organism or the reaction of a peculiar type of child to the more common infecting organisms cannot yet be stated. He found infected tonsils, persistent nasal discharge and cervical adenitis in all cases. He considers that this is reasonable evidence of a possible focal infection. He has never seen a case in a child whose tonsils and adenoids had been removed. The accessory nasal sinuses should be considered as possible foci of infection, but such infection was not found in his series. Finding that, when tonsils and adenoids were removed because of a persistent upper respiratory infection, patients promptly recovered from their acrodynia, he began to remove tonsils and adenoids as soon as the diagnosis of acrodynia was evident. He believes that the removal of tonsils and adenoids in the early stages may abort the disease. He says that the early recognition of the disorder and the prompt removal of the tonsils and adenoids has been followed by speedy recovery in all patients.

GOITER INCIDENCE IN SCHOOL GIRLS OF NEW YORK CITY

It was at first supposed that the goiter belt was limited to the region of the Great Lakes. Surveys in various parts of the country have shown, however, that it extends throughout the United States in varying degrees of severity according to the geographical location, the immediate cause of simple goiter being a relative or absolute deficiency in iodine, that is, an iodine starvation. It was supposed that it would not occur in localities near the sea coast, where there is a small amount of iodine in the air and sea food is more commonly eaten. Nevertheless, Goldberger and Aldinger (*American Journal Diseases of Children*, XXIX, 780) undertook an investigation as to the incidence of goiter in school girls in New York City. They examined 11,084 girls from Manhattan and the Bronx. The thyroid was normal in 79.7% of 9978 white girls, slightly enlarged in 17.2%, moderately enlarged in 2.6% and markedly enlarged in 0.5%. In a group of 1106 negro girls the thyroid enlargement was 6.7% less than in the white girls. The enlargement was first noticeable at nine years and reached its maximum between thirteen and fifteen years. The girls born to mothers of foreign birth showed the lowest incidence of thyroid involvement.

For treatment they recommend a dose of ten milligrams of organic iodine once or twice a week until the size of the thyroid gland returns to normal. After that a prophylactic dose should be administered once a week with intermissions between seasons. This dose should be five milligrams.

The results of a similar investigation, which is now being undertaken in Eastern Massachusetts, should be of much interest.

ACUTE NEPHRITIS

The investigations of Blackfan and Hamilton in acute nephritis are of great interest and of much practical importance in the treatment of this disease. A year or more ago they reported on the treatment of edema with salts which produced an acidosis, with a diuresis and loss of edematous fluid paralleling the acidosis. They now report the results of studies showing the effect of bicarbonate of sodium in patients with acute tubular nephritis and edema who did not respond to treatment with acid producing salts (*American Journal Diseases of Children*, XXX, 586). They found that when sodium bicarbonate is given in suitable amounts to patients with this form of nephritis an immediate and marked diuresis may follow. This ceases when the bicarbonate is discontinued. When the amount of bicarbonate is increased so that, as they are inclined to believe, an alkalosis results, there is likewise a diminution in the urinary output and an increase in the edema. They also found that excessive

amounts of bicarbonate of soda may be given to certain patients, followed by a diuresis, without causing an alkalosis.

They state that it seems from their observations that, in order to cause an alkalosis a certain degree of renal injury must be assumed and that, if an alkalosis results, the diuretic action is held in abeyance. They also state that further studies are necessary before an explanation can be offered regarding the action of sodium bicarbonate in liberating edematous fluid from the body tissues. Certain observations, which they made, may have an important bearing on this point. They found that the total fixed base in acute nephritis is always lower than normal. This low value is raised by the administration of sodium bicarbonate. As there is also a slight increase in the plasma bicarbonate, but without a decrease in the chlorids to offset the increase of this value, that is, plasma bicarbonate, it is probable that the total ionic concentration of the blood must also be increased. An increase in the total ionic concentration of the blood and the resulting increase in osmotic pressure may possibly explain the diuretic action of this alkaline salt.

Their paper on "Uremia in Acute Glomerulonephritis," read at the last meeting of the Massachusetts Medical Society and published in the BOSTON MEDICAL AND SURGICAL JOURNAL, CXCH, 617, is probably familiar to all. Their summary, however, is worthy of repetition. They state that the form of uremia seen in acute glomerular nephritis in children is always preceded by a steady rise in arterial tension and by visible, but not necessarily marked, edema. The steady increase of arterial tension is the most reliable indication of approaching uremia. Arterial hypertension is probably the result of increased intracranial pressure. Intracranial tension, resulting from edema of the brain, is probably the causative factor of the symptoms in this form of uremia. The intravenous injection of a one per cent. solution of magnesium sulphate, together with the administration of large doses of this salt by mouth and by rectum, has been found to be effective in the treatment of this form of uremia. The intravenous injections should be repeated, if necessary, at from twelve to twenty-four hour intervals until the blood pressure remains at a low level and the cerebral symptoms have diminished. The solution is injected in amounts of from ten to fifteen c.c. per kilogram of body weight at the rate of 2 c.c. per minute. The falling blood pressure during the procedure is the best evidence as to the total amount necessary to use. The injection is followed by a prompt fall in the blood pressure with rapid relief of the cerebral symptoms. Diaphoresis and diuresis often follow, but there is no cathartic action.

The duration of the effect is from five to twelve hours.

DISEASES OF THE NERVOUS SYSTEM

Montgomery and Cole (*Journal of the American Medical Association*, LXXXV, 890) have again brought up the question of repeated lumbar puncture in the treatment of poliomyelitis. They performed lumbar puncture whenever poliomyelitis was suspected from the early symptoms, that is, before, as well as after, the development of paralysis. If there was a definite increase in pressure, with or without a pleocytosis, lumbar puncture was repeated at twelve or twenty-four hour intervals until the pressure had definitely subsided. This usually occurred after about three or four punctures. The usual experience was that, after the pressure had once subsided, it did not recur. The pressure was estimated, not accurately measured. In sixteen cases, lumbar puncture was performed not later than the third day; in six cases, after the third day. In the cases in the first group paralysis was noted in only one instance, and this consisted of a slight weakness, which was purely temporary. In the cases in the second group paralysis developed in all but one instance and was permanent in four. There is still some weakness present in the fifth. They admit that many cases, such as those in group one, may go on to complete recovery without recognition and that it is possible that these cases would have done so without lumbar puncture. Nevertheless, in the three cases in which an early diagnosis was not made and in which lumbar puncture was not performed until late in the illness, paralysis did occur. They say that, entirely aside from the possible relationship of the spinal drainage to the outcome, marked improvement in the symptoms was invariably noted, there being, without exception, cessation of vomiting and a diminution in the hyperesthesia, neck rigidity and spinal rigidity. Even in cases in which paralysis occurred, a marked improvement in the symptoms was noted at once after lumbar puncture. Wolff (*München, med. Wchnschr.*, LXXII, 56) also recommends the treatment of poliomyelitis by repeated lumbar puncture. He advises continuing the punctures until the cerebrospinal fluid becomes normal.

Other observers have also reported in the past favorable results from lumbar puncture in the treatment of poliomyelitis. Others, however, have seen no such favorable results and many others, who have not reported their experiences, have seen no favorable results from lumbar puncture in this disease. In estimating the value of the apparent results of lumbar puncture in poliomyelitis, it must be remembered that, as Montgomery and Cole admit, many cases undoubtedly recover during the

period of systemic infection or, when there has been meningeal invasion, without extension of the pathologic process to the spinal cord, which are not recognized and cannot be without lumbar puncture. The fact that cases which are recognized in the early stages by lumbar puncture recover does not prove, therefore, that these cases would not have recovered without lumbar puncture. Furthermore, the presence of increased pressure and a slight pleocytosis does not prove conclusively that the disease is poliomyelitis. Another point which should be borne in mind is that it is possible that the withdrawal of the cerebrospinal fluid by lumbar puncture before the period of meningeal invasion may, by changing the cerebrospinal pressure, favor the invasion of the nervous system and the further progress of the disease.

Roberts (*Journal American Medical Association*, LXXXV, 500) studied the spinal fluid of over four hundred newborn infants and found that it varied in color from a pale straw to a deep yellow, the intensity of the color being more marked in premature and small infants than in large, full term babies. This coloration is due to bilirubin. It increased with the supervention of jaundice. The xanthochromia is, therefore, not dependent on intracranial hemorrhage, although it is undoubtedly intensified by its occurrence. The pigment persists at least until the ninth day and is always gone by the fourth week.

He found macroscopic blood, not due to the puncture, in 14.1% of the cases. He considered this to be evidence of *intracranial hemorrhage*. In only two of the sixty cases was the blood due to hemorrhagic disease of the newborn, being the result in the others of trauma during the course of delivery. Prematurity was evidently a predisposing factor to such hemorrhages, while syphilis was not. Twenty-six of the babies showed evidences of cerebral disturbance, the symptoms varying directly with the amount of hemorrhage into the spinal fluid. The remaining thirty-four infants were apparently perfectly normal and, unless lumbar puncture had been done, intracranial hemorrhage would have never been suspected. Eight of these babies died in the hospital of the hemorrhage. Two others died later as the result of the hemorrhage and two from intercurrent infections. Forty-two are known to be alive and have been followed for periods varying from two to nineteen months. Only two show any evidences of injury from the hemorrhages. He concludes that intracranial hemorrhage in the newborn is a common occurrence even in normal labor and that only in severe cases does it exhibit symptoms. The death rate is high. Death occurs very shortly after birth in those cases terminating fatally. The possibility of permanent disability is remote. Grulee has taken up the *treatment of intracranial hemor-*

rhage in the newborn (*Journal American Medical Association*, LXXXV, 336). He calls attention to Schwartz' work, which showed that there is distinct destruction of nervous tissue within twenty-four hours after the occurrence of the hemorrhage and that there is but little further destruction afterward. It seems altogether likely, moreover, that the destruction of nervous tissue by pressure from hemorrhage takes place in less time than twenty-four hours. He also calls attention to the findings of Jacobs, who showed that there is very evident recovery from multiple hemorrhages in the retina without apparent disturbance of vision, which makes it probable that recovery may occur from similar hemorrhages on the surface of the brain. He then calls attention to the fact that the symptoms of intracranial hemorrhage in the newborn are notably unreliable in the early stages and says that it is rarely possible to make a diagnosis of the condition within the first twenty-four to forty-eight hours by the symptoms alone, that is, not until the damage has been done.

He says that it has been urged that the condition is such a serious one that any form of treatment is justifiable and that as the presence of a hemorrhage means death or mental deficiency remedial measures of a radical nature are justified. He goes on to say that two points should be considered as regards mental deficiency. The brain defect may not be the result of hemorrhage, but the hemorrhage the result of the brain defect. Furthermore, mistakes are often made in the diagnosis of intracranial hemorrhage. In many instances, in which this diagnosis is made, the infants grow up without any evidences of mental deficiency. He says, as is probably true, that the decompression operation has been pretty well discarded. He raises several objections to tapping the hemorrhage by the anterior fontanelle. It is impossible to locate the hemorrhage from the symptoms. If the vessels are not thrombosed, the removal of the blood results only in refilling the area with blood. If the hemorrhage has stopped, the brain substance is, or has been, damaged. The position in lumbar puncture produces venous congestion in the cranial cavity and favors further hemorrhage. The objections to lumbar puncture as a remedial measure are much the same as those to fontanelle puncture. He admits that theoretical objections to these methods of treatment are not of importance, if the practical results are satisfactory. In his experience, however, such is far from being the case. His conclusions are that, in the present state of our knowledge, the best treatment for intracranial hemorrhage is absolute quiet and rest. The measures adopted up to the present time for the relief of the condition are satisfactory neither from the theoretical nor from the practical standpoint. The

damage is done before the measures can be of value and, in consequence, until a diagnosis can be made earlier than seems at present possible, the best plan to be followed is to see that nothing is done to disturb the quiet of the infant.

Most of those who discussed the paper disagreed with Dr. Grulee. The general feeling seemed to be that it was wiser to make repeated lumbar punctures in these cases than to leave them alone and that the final results were better with than without lumbar puncture.

Dr. Roberts' findings throw considerable doubt, however, on the favorable results of lumbar puncture in such cases. Dr. Grulee's paper is especially interesting in that it shows a reaction against the radical measures proposed for the treatment of this disease a few years ago.

Peterman (*Journal American Medical Association*, LXXXIV, 1979) has tried the *ketogenic*, or high fat, diet in the treatment of epilepsy in childhood at the Mayo Clinic. He observed thirty-seven children over periods of from four months to two and one half years. Seven had grand mal, seventeen petit mal and thirteen both grand and petit mal. The ketogenic diet consists of a large amount of fat with minimum amounts of protein and carbohydrates. The object of this diet is to produce a ketosis, as evidenced by acetone and diacetic acid in the urine. Each patient is given a special diet. The basal metabolic requirement is determined directly or calculated from the Dû Bois normal standards. Thirty per cent. is then added to the basal food requirements for growth and energy. The calorie allowance depends on the age, weight and height of the patients and approximates seventy-seven calories per kilogram. After a few days of gradual carbohydrate restriction, fifty, forty or twenty grams daily, with increasing allowances of fat, seventy, ninety or one hundred grams daily, the patient is put on his individual prescription. This consists of from ten to fifteen grams of carbohydrate daily with one gram of protein for each kilogram of body weight and sufficient fat to supply the remaining calorie needs. Provision is made for the vitamins and salts. Water is allowed freely. This diet is not well tolerated, if it is started abruptly. There is little difficulty, if it is started gradually. He states that shortly after the urine shows acetone and diacetic acid there is usually a decrease or a complete cessation of the epileptic seizures. In certain cases it is necessary to decrease the carbohydrates further, to increase the fat, or both before the attacks will cease. The ratio of seven grams of fat to one gram of combined carbohydrate and protein was used in only one case and this proportion was not exceeded. After the patients are free from attacks for three or four months and still showing a ketonuria, the diets are gradually modified. The

carbohydrate is increased five grams every other month, alternating with an increase of five grams of protein. The fat is decreased in proportion. He feels that the results of this method of treatment are very encouraging. All the patients have developed normally. Three patients are again on normal diets, after nine, ten and twelve months of treatment respectively, and are still free from convulsions.

This treatment is interesting, but certainly quite drastic. It is not so severe, however, as that by complete starvation. His findings ought not to be accepted without reservations until they have been corroborated by those of other observers. Work along this line is going on in a number of other clinics. It will be interesting to see whether their results are the same.

ULTRAVIOLET IRRADIATION

Hess (*Journal American Medical Association*, LXXXIV, 1033) says that the ultraviolet rays constitute less than one per cent. of the total solar radiations. He says that there is no close parallelism between the incidence of rickets and the annual amount of sunshine and that the occurrence of rickets does not depend on the equable distribution of sunshine throughout the year. The determining factor is the quality, not the quantity, of the sun's rays. The amount and intensity of these short radiations, which are alone of value in preventing rickets, explains the absence of rickets in the Panama Canal Zone in comparison with its frequency in New York, although the yearly sunshine is less and is less evenly distributed in the Panama Canal Zone. Heliotherapy is disappointing during the winter because "the antirachitic radiation of the solar spectrum" is very limited at this season and infants cannot be exposed directly to the sun's rays on account of the severity of the climate. The effective solar irradiation is so slight in the winter that the substitution of quartz panes for ordinary window glass is not sufficient to afford protection against rickets.

A number of observers have shown that irradiated air does not acquire any growth promoting or antirachitic properties. The earlier startling findings have been shown to be due to the ingestion of activated materials (food residue and excreta), not to the air itself. (Hughes, Nitcher and Titus, *Journal Biologic Chemistry*, LXIII, 205; Nelson and Steenbock, *Journal Biologic Chemistry*, LXII, 575; *Report of Medical Research Council 1923-24*, H.M.S. Stationery Office, 1924, 65.)

Many investigators have shown that antirachitic properties can be imparted to a large variety of substances by irradiation with the ultraviolet light. It is now generally believed that the chemical substances which are activated by the ultraviolet rays are cholesterol in

animal foods and phytosterol in vegetable foods. These substances are present in almost every vegetable and animal food. It also explains the fact that it is impossible to impart antirachitic power to mineral oil. Pure cholesterol can be activated in the same way as when it is in combination. It has been found that cholesterol, after it has been irradiated, gives a different absorption band in the ultraviolet from the ordinary cholesterol, showing that a definite chemical change has been brought about in the cholesterol by irradiation. It has also been shown that, if cholesterol is irradiated for four hours or more, it gradually becomes inactivated. When so inactivated, it cannot be reactivated. These experiments apparently explain the curative action of the ultraviolet rays in rickets. The epidermis of the skin contains cholesterol. Ultraviolet rays activate the cholesterol in the skin and this activated cholesterol is transported by the circulation throughout the body. Proof that this is the explanation is that when rats on a rachitic diet are fed irradiated skin they do not develop rickets, while control animals fed nonirradiated skin become rachitic.

Certain other interesting points have been brought out in the course of these experiments. Green vegetables have little or no antirachitic potency. This potency can, however, be given with the mercury lamp. The reason that it is given by the lamp and not by the sun is that the solar radiations are not more than one thirtieth or one fortieth as strong as those of the lamp and because only the tops of the leaves are exposed naturally, while the whole surface is exposed artificially. Irradiated spinach, incidentally, retains its antirachitic power after boiling for thirty minutes.

Another interesting and important point in relation to treatment with the ultraviolet rays is that prolonged experimental irradiation of oils, other food substances and cholesterol shows that prolonged irradiation diminishes and finally destroys the antirachitic powers. This fact must have a practical application in the use of ultraviolet rays in clinical medicine. It is evident that it is possible that irradiation may do harm. It is evidently wiser to underirradiate than to overirradiate. Unfortunately there are no definite data as to how long irradiation should be. The dosage is entirely empiric. (Steenbock and Daniels, *Journal American Medical Association*, LXXXIV, 1093; Hess, *American Journal Diseases of Children*, XXX, 451; *Journal American Medical Association*, LXXXIV, 1910; Hess, Weinstock and Helman, *Journal Biologic Chemistry* LXIII, 305; Hess and Weinstock, *Journal Biologic Chemistry*, LXIII, 297, LXIV, 181, 193; Steenbock and Black, *Journal Biologic Chemistry*, LXIV, 263.)

The natural result of the effect of irradiation

of food substances was to lead physicians to try the effect of the irradiation of cow's milk and milk mixtures in infant feeding. György (*Klin. Wchnschr.*, IV, 1118) found that exposure of the milk for from one half hour to one hour cured florid rickets in sixteen out of eighteen patients. Cowell (*British Medical Journal*, 1925, I, 594) got favorable results in two rachitic babies treated with irradiated milk, while there was no improvement in the third child that received untreated milk. Kramer (*American Journal Diseases of Children*, XXX, 195) treated eight rachitic infants with irradiated milk and produced healing in every case. He found that the chemical changes in the blood were identical with those following the administration of cod liver oil, direct exposure to ultraviolet rays or to sunlight. Irradiated milk feeding induces a marked retention of both calcium and phosphorus. He irradiated the milk for not more than two hours at a distance of two feet, but feels that equally good results may be obtained with an exposure of from ten to twenty minutes.

There is a marked tendency at present, not only to use ultraviolet rays in the treatment of rickets and spasmophilia, but also for all sorts of disturbances of nutrition and many other diseases. There is very little experimental evidence to show how irradiation can be of use in these conditions or how it does good, if it does.

The experiments of Colbrook, Leonard, et al. (*British Journal Experimental Pathology*, V, 54) corroborate some of the earlier experiments showing that the ultraviolet rays have a bactericidal power. Their results indicate that exposure of the skin of animals to a series of ultraviolet radiations gives an increased bactericidal power to the blood and serum. On the other hand, irradiation of blood in vitro destroys its bactericidal properties. They warn that irradiation must be carefully graded, since excessive exposures cause a deterioration of the blood no less striking than the improvement obtained with smaller doses. Bloch and Faber (*American Journal Diseases of Children*, XXX, 504) found, in two children with diabetes, that there was a distinct reduction in the blood sugar after the light bath. They conclude that, a, no more sugar was excreted in the urine and since the sugar could hardly be deposited in the tissues, there is no other alternative than that it must be oxidized. They conclude that light, and particularly ultraviolet rays, has a stimulating effect on the organism which chiefly benefits those functions which are depressed. Kopits (*Orvosi hetil*, LXIX, 124) followed the changes in the blood picture of tuberculous children after exposure to sunlight or ultraviolet light. The hemoglobin and the number of red cells increased in every case. The white blood cells fluctuated. The

blood picture of Arneth was changed to the right. The neutrophils were decreased and the other white cells increased. This all means a change in the blood picture to one which seems to be the most favorable for the organism in its fight against infection.

Gerstenberger and Wahl (*Journal American Medical Association*, LXXXIII, 1631) found ultraviolet ray therapy of decided value in the treatment of peritoneal, glandular and osseous tuberculosis. They treated ten children. They think that of the glandular forms of tuberculosis, the mesenteric is the most rapidly improved, the mediastinal next and the peripheral last. No results were obtained in pulmonary tuberculosis of the miliary type, although treatments were begun early. Zahorsky (*Journal Missouri State Medical Association*, XX, 61) used the quartz light in two hundred cases of various local and general diseases in children. He concludes that it generally gives good results in skin diseases, that it helps in erysipelas and in ringworm, but does not help in furunculosis or impetigo. He thinks that it is of use in malnutrition, but has not studied a sufficient number of cases to justify definite conclusions. He also thinks that the results are generally good in tuberculosis and that it helps chronic bronchopneumonia. He had good, but not striking results in the treatment of chronic infected tonsils. The improvement in nutrition in tracheobronchial adenitis was often remarkable. It was sometimes of use in otitis, but never helped vaginitis. He concludes that the quartz light is a valuable addition to therapeutics, but that it can generally be replaced by open sunlight in the summer.

It is very difficult to draw any conclusions as to the beneficial effects of the ultraviolet rays in the treatment of disturbances of nutrition and many other chronic conditions, because other treatment is always used at the same time. From necessity, there can be no controls and the personal equation also necessarily plays an important part in judging of the results obtained.

IMMUNOLOGY AS APPLIED TO ROCKY MOUNTAIN SPOTTED FEVER

THE United States Public Health Service, one of the duties of which is to investigate diseases of man with the ultimate purpose of devising means for prevention and cure, has recently announced the results of experimentation which lead to the belief that a most unusual vaccine has been produced which may protect human beings against Rocky Mountain spotted fever.

"Rocky Mountain spotted fever," sometimes called tick fever, which occurs principally in certain Northwestern States, has been the sub-

ject of investigation and experimentation for a number of years," says Surgeon General Cumming. Little was known of the disease before 1902. It has an exceedingly high fatality rate; in some localities about seven patients out of every ten die.

It is a fatal disease when contracted in the laboratory. Assistant Surgeon McClintic, an officer of the Public Health Service, contracted Rocky Mountain spotted fever while engaged in experimental studies in Montana and died in line of duty, as did also Laboratory Assistants William E. Gettinger, and George Cowan—all martyrs to Science.

The disease is transmitted by ticks. A peculiar feature of the virus which produces this fever, a feature discovered by Public Health Service investigators, is that it passes through developmental phases in the tick—the intermediate host—whereas it has no such phase in man or animals.

At one period in the life of the tick, the virus of the disease as obtained from the ticks will not, when inoculated, produce the disease in animals. This period corresponds in time with the hibernating period in the life of the tick, or at least to the period of its life in which the tick takes no food. At another stage of development, corresponding to the feeding time of the tick, the virus is highly infective and virulent.

In 1923 and 1924, the investigators prepared a protective vaccine made by extracting and attenuating the virus from macerated infected ticks during the stage at which the virulence of the virus was highest—a period following the ingestion of animal blood by the tick; and this vaccine was found to protect laboratory animals from the disease. During the present year these experiments were continued and the vaccine was tested on monkeys and man. It was proved that it protects guinea pigs, rabbits, and monkeys, and it is now believed to have modified the severity of the disease in the case of a man who contracted it after having been vaccinated. The man was engaged in dipping cattle in Montana—an occupation involving exposure to the infection. Together with several other men, he was vaccinated late last spring, and, sometime afterwards, he contracted the fever. This case was exceedingly mild, though it is usually severe and highly fatal in that locality. None of the other vaccinated men contracted the disease.

Should this vaccine fulfil the expectations confidently hoped for, another advance will have been made along that high road of preventive medicine known as "immunology," toward the goal set by Pasteur when he stated that it was within the power of man to cause all germ diseases to disappear from the world.—United States Public Health Service.

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN
WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY

RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 11511

MEDICAL DEPARTMENT

A NOVA SCOTIAN gardener fifty-two years old entered August 15 complaining of pain in the stomach of seven weeks' duration. He recalled no serious diseases except typhoid fever at eighteen, followed by earaches. The left ear was defective. His teeth were removed when he was twenty-eight. He was subject to winter colds, not infrequently with sore throat. He believed he had a chronic catarrh. For twenty years he had had some cough off and on. For ten years he had had very severe frontal headaches about once in two months. Before he gave up smoking, fifteen years before admission, he had precordial pain and palpitation. He had noticed by taking his pulse that his heart was slow and irregular. He urinated twice at night.

For seven weeks he had had constant dull aching pain in the midepigastrium, slightly better after eating, worse again two hours after meals. (He told another person that food made the pain worse.) Fluid made it much worse. For the first two weeks he merely took physic, which helped somewhat. Then he saw a physician whose medicine did not relieve him. For six weeks he had had no appetite. For five weeks he had had cough, worse after drinking or eating, gradually increasing in frequency and severity. With it was a yellowish sputum so foul as to nauseate. He thought he had had one or two chills, and that he had lost twenty-five pounds during the illness. For five weeks he had been increasingly dyspneic.

A gastro-intestinal X-ray taken in the Out-Patient Department two weeks before his admission showed no irregularity or filling defects in the stomach. The duodenum was normal.

Upon examination he was well nourished, in spite of the reported loss of weight. He was apprehensive and groaning but not in pain. There was considerable cyanosis of the upper thorax and head at the entrance examination. Later this was found to vary. The left supraclavicular glands were markedly enlarged, with a shotty feeling, and larger glands beneath. The apex impulse of the heart is not recorded. The supracardiac dullness was 8 cm. There was no other enlargement to percussion. The heart was

otherwise normal. The pulses and artery walls were normal. The blood pressure was 120/80 to 130/80. Electrocardiogram showed auricular tachycardia, probably paroxysmal, rate 150, with ventricular premature beats, usually trigeminal. The apices of both lungs were dull. There were fine inspiratory râles throughout the right chest in the axillary line, also in the left axillary line. Over each primary bronchus posteriorly and for a small distance above and below was found marked bronchial breathing. There was no change in voice sounds. D'Es-pine's sign with whispered voice was positive to the fifth dorsal vertebra. The prostate was enlarged, and the vesicles were markedly enlarged. There was a question of some palpable glands by rectum. The genitals showed phimosis. The pupils and reflexes were normal. Fundus examination showed evident cribiform plate in both fundi, very large veins, discs normal.

The temperature was 97.3° to 101.5° with constant afternoon rise, the pulse 65 to 110, with a pulse deficit of 50 to 30 during the last two days. The respirations were normal except for a terminal rise to 48. The urine was cloudy at both of two examinations, the specific gravity 1.022 to 1.030, amount normal, 5-10 leucocytes per high power field at one examination. The blood showed 11,600 to 8,800 leucocytes, 83 to 92 per cent. polynuclears, hemoglobin 70 to 85 per cent., 3,200,000 to 6,200,000 reds. Two smears were normal. A Wasserman was negative. Two stool examinations were negative for occult blood. X-ray showed fine miliary mottling involving the greater portion of the lung fields from the periphery to the midportion. The outline of the diaphragm was visible on both sides. The costophrenic angles were clear. The heart shadow appeared to be within normal limits. The mediastinal shadow did not appear to be increased in width. By fluoroscope the mediastinum was clear.

August 18 the bronchial breathing was absent. That night a biopsy of a left supraclavicular gland was done.

August 21 at the ward visit the patient showed apparent alternation, evenly spaced beats alternately strong and weak. This gave way to a bradycardia at the wrist of about 50. At the same time auscultation showed a tachycardia of 160 with regular sounds. Later the tachycardia persisted but showed some irregularity. It was believed that all the phenomena were due to extrasystoles. During the tachycardia left vagal pressure slowed the rate for a few seconds.

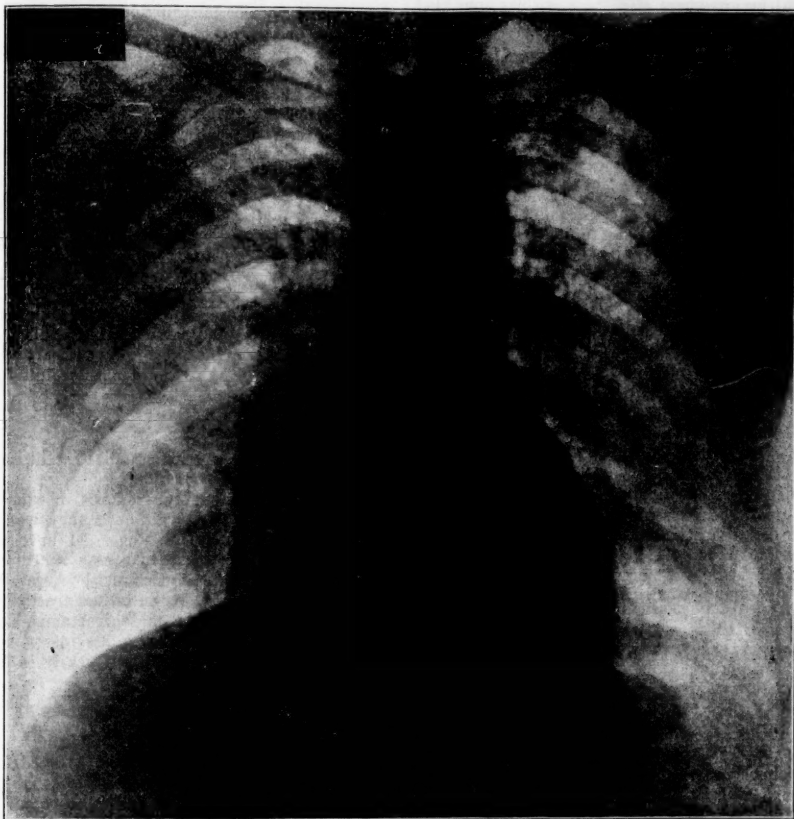
August 22 the patient died in extreme respiratory distress.

Note by the senior house officer, Dr. Norman Johnson. The relation of food to the pain had not been a constant feature. He reported that his sputum had been foul, but this was never

found true on the wards. There it was moderate in amount, gelatinous and yellow, with the predominating organism pneumococci, though organisms were scarce. Six examinations were negative for tuberculosis.

headaches which make us think of the kidney, then palpitation and irregularity of the heart. It will be surprising if the case does not turn out to be disease of the heart, kidney, or both.

My impression at the end of the second para-



Shows fine miliary mottling involving the greater portion of the lung fields from the periphery to the midportion. The outline of the diaphragm is visible on both sides. The costophrenic angles are clear. The heart shadow appears to be within normal limits. The mediastinal shadow does not appear to be increased in width.

DISCUSSION

BY DR. RICHARD C. CABOT

NOTES ON THE HISTORY

The suggestions of the first paragraph are of heart or kidney disease. He has had a cough coming on in late middle life in the way that the cough of passive congestion does, what we used to call a "winter cough" and supposed was due to bronchitis, but now know pretty well to be due to heart weakness. Then he has

graph is entirely different from my impression at the end of the first. It looks to me now much more like a gastro-intestinal disease, cancer possibly at the root of the esophagus or in the stomach, with metastases or extensions that involve the lungs.

"Stomach and duodenum normal" contradicts what I said in part, but not necessarily as relates to the esophagus. The barium goes through so fast in the esophagus that it is possible to miss something there, isn't it?

DR. HOLMES: Yes.

NOTES ON THE PHYSICAL EXAMINATION

DR. CABOT: There is no evidence apparently of any lesion of the heart.

Of course right over the primary bronchus bronchial breathing is not so significant as it would be anywhere else. We are not sure that there is anything abnormal from that finding.

D'Espine's sign to the fifth dorsal vertebra should mean glandular or some other tumor somewhere near the bifurcation of the trachea.

There is nothing of importance in the urine.

I do not believe that the blood varied from three to six million reds, but so it is stated.

We have here the X-ray of the chest.

DR. GEORGE W. HOLMES: The outline of the diaphragm is visible on both sides. The heart shadow is within normal limits. This plate is perhaps a little under-timed, but a rather good plate, and shows the outlines of the diaphragm sharply on the right, possibly a little high on the left, but there is gas underneath it and that may account for it. Here we see the moderately prominent descending aorta on the left, and on the right the ascending. The curve of the left border of the heart is possibly a little large, but this is not a plate taken with special reference to the heart. The lung fields however show a very definite mottling throughout, and it is most marked around the hilus, showing a kind of explosion effect outward into the fields. There are a number of pathological processes that show such conditions, and I do not know how to differentiate them. One of them is miliary tuberculosis. Miliary tuberculosis as a rule involves the apices and usually shows some old area elsewhere in the lungs. This plate gives no positive evidence of tuberculosis. Another condition is pneumoconiosis, and this might perfectly well be such a case. There is nothing in the history, though, and we have no reason to think that it is this disease. Malignant disease will do that, and malignant disease does not involve the apices as a rule. It is more likely to give this effect of an explosion out into the lung fields from the hilus. So I shall put malignant disease ahead of miliary tuberculosis from the X-ray alone, and in the absence of dusty occupation that would be a pretty good bet, although we cannot go that far. Long-standing asthmas sometimes give a picture very much like this. I think it must be due to repeated infections and the development of fibroid changes in the lungs. These patients of course have a large chest and low diaphragm with limited respiratory motion, which this man did not have, so we do not have to consider it.

Another condition which will give much the same picture is chronic heart disease, decompensated heart over a long time, particularly a mitral lesion. This man has not a mitral-shaped heart, so that it is not a mitral lesion, and his heart does not seem to show enough damage to

account for such a picture in his lungs. If I were obliged to make a diagnosis I should say malignant disease of the lung.

DR. CABOT: It seems to me that this shows the sort of service that X-ray ought to give us. With that plus the rest of the history it seems to me that we can be tolerably certain. This man is a gardener, not exposed to the dust of pneumoconiosis. He has not had a history of asthma, which is a very definite history. He has not had a history of tuberculosis. That is not so definitely excluded, but the history does not sound like it. So it seems to me that with what you give us and what we can see in the history we ought to be able to say this is malignant disease. I did not realize that mitral disease can give such a picture as that. I am glad to know it. Certainly it is not a common mitral picture, and we have no mitral disease here.

A PHYSICIAN: Would this picture rule out abscess of the lung?

DR. HOLMES: Abscess would not account for the whole picture. We cannot always rule out abscess because it might be behind the heart and would not show. But it would not account for that fine mottling.

DIFFERENTIAL DIAGNOSIS

DR. CABOT: He died with malignant disease of the lungs, I believe. The sputa go very far certainly to exclude tuberculosis in such a stage as that plate shows, although they would not exclude it in incipient stages. I have no doubt that it is malignant disease scattered through the lungs. The question is, where else is it? What about the gastro-intestinal tract? He has had dull pain in the midepigastrium, but there is nothing in the X-ray plate to explain why. He complained of that pretty early in his history.

DR. RICHARDSON: Is that the only plate there is?

DR. CABOT: Apparently it is. Then he loses appetite, which of course could be accounted for by malignant disease anywhere. His cough is worse after eating and drinking.

A PHYSICIAN: Why did he not get fluid in the lungs, in the pleura?

DR. CABOT: It is usually carcinoma of the pleura itself that gives fluid in the pleura rather than carcinoma in the lung itself. But I am still not satisfied as to the starting-point of this cancer. Do you get any impressions, Dr. Holmes, as to the lung lesions being primary or secondary? I have the impression, without knowing anything about it, that these are secondary.

DR. HOLMES: I agree. It is rather unusual to have primary cancer in both lungs. Have we a right to the pathological report?

DR. CABOT: Yes.

MISS PAINTER: It is "metastatic carcinoma."

DR. CABOT: Now the interesting thing is, where did it come from?

A HOUSE OFFICER: Perhaps from the prostate?

DR. CABOT: We have not enough evidence about prostate to make anything definite. We are not told about its feel, its hardness. But, as you say, it might come from the prostate so far as anything stated here goes. It might so far as I know have involved the lower end of the esophagus.

A PHYSICIAN: Of what significance is the disturbed cardiac function?

DR. CABOT: I do not see that it is of any significance. If it is I do not know what. He is at an age when a person can have arteriosclerosis and a slightly enlarged heart, but that would not necessarily give him any of these disturbances of rhythm. I do not know the cause and do not believe we shall know it after death.

A PHYSICIAN: Could it be from vagal irritation by the tumor?

DR. CABOT: I should not suppose so. That ought to give us a slow heart on the whole, and things were going in the opposite direction.

I think there ought to be masses of glands around the bifurcation of the trachea. I suppose this cancer might have started in the remains of the thymus, but I doubt if we shall know that. So I do not think I really know where it started, but I should be pretty sure it did not start in the lungs.

X-RAY INTERPRETATION

The changes in the chest show a diffuse military process involving both lung fields suggesting military tuberculosis, but possibly metastatic malignant disease.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Carcinoma of lung, metastatic.
Paroxysmal auricular tachycardia.
Bronchopneumonia.
Biopsy, supraclavicular gland.

DR. RICHARD C. CABOT'S DIAGNOSIS

Metastatic carcinoma of the lung and the tracheal lymph glands.

ANATOMICAL DIAGNOSIS

1. Primary fatal lesion

Carcinoma of the appendix.
Metastases in the mesenteric, retroperitoneal, bronchial and tracheal lymph glands and in the liver and lungs.

3. Historical landmarks

Slight chronic pleuritis.
Biopsy wound.
Slight hypertrophy and dilatation of the heart.
Obsolete tuberculosis of the bronchial lymph glands.

DR. RICHARDSON: This is a very unusual case. He was a fairly well nourished man, although he had plenty of new growth tissue in him.

The head was not examined.

In the abdominal wall there was bluish post-mortem discoloration. The necropsy was done 551 hours after death. The muscles showed some post-mortem change.

The peritoneal cavity contained no fluid. The appendix rested slightly retrocecal, was about the size of the forefinger, and showed thick new growth infiltrated walls with a central lumen about one millimeter in diameter. The outer surface of the appendix presented a roughish grayish network extending from the appendix on to its mesentery and to some extent on to the great mesentery. Beneath this network were enlarged mesenteric glands showing new growth infiltration.

The esophagus, stomach, pylorus, and intestines were frankly negative.

The mesenteric glands generally were enlarged and infiltrated with new growth. The retroperitoneal glands in the lesser omentum were negative, but along each side of the aorta there was a chain of enlarged glands, one to two mm. across, infiltrated with new growth. Do you think that shadow in the X-ray shows them, Dr. Holmes?

DR. HOLMES: I think not.

DR. RICHARDSON: The anterior margin of the liver was at the costal border. There were no pleural adhesions except slight ones at the apex, and on the left one to the diaphragm.

The trachea and bronchi were capacious but had a smooth mucosa. They contained much brownish red slightly frothy material such as might come from a passively congested lung. The glands in the region of the bifurcation of the trachea were slightly enlarged, if at all, pigmented, and in two of them were small areas of old tuberculosis. But the glands along the trachea extending on each side toward the clavicles were enlarged and infiltrated with new growth tissue. Of course it was a bit of these they took at the biopsy. The thyroid gland was negative and there was no evidence of thymic tissue.

The lungs were voluminous. On the surface of the pleura there was a rough network like that on the appendix extending through the lung tissue. In places the strands of the meshwork were fused into grayish streaks, minute nodes and small areas which presumably are what we see in the X-ray. The lung tissue itself was rather sodden, with no definite areas of pneumonia, and we found none microscopically. This network on the surface and extending throughout the lung tissue was made up of infiltrating carcinoma cells.

The heart weighed 423 grams, slightly enlarged but otherwise negative. The circulatory apparatus generally was frankly negative.

The liver weighed 1535 grams, a good enough liver except that in two places there were smooth grayish areas which were the outer surfaces of small definite masses of new growth tissue. These were only five to ten mm. across.

The gall-bladder, bile ducts, pancreas, duct of Wirsung and adrenals were frankly negative, as were the kidneys, ureters, bladder prostate, seminal vesicles and testes. So that we have gone through the tissues of this body and find evidences of new growth in the appendix, in the glands, in the lungs and the liver. It is a carcinoma of the appendix with metastases in the places mentioned.

Of course carcinomas of the appendix have been noted for a good many years, and every once in a while we pick up one. They are usually in the tip, showing as a small ovoid mass of new growth tissue with rather small cells alveolarly arranged. Tumors of the adenocarcinomatous type have been reported. There has been a very small percentage of the cases associated with metastases. These have been found in the glands and the liver. But in this case they went up as far as the lungs and the mediastinal glands.

DR. CABOT: It seems to me very interesting that the X-ray should show so much more obviously than the lungs after death. If you had not looked carefully you might have missed it, but anybody could see that something was wrong in the X-ray.

DR. RICHARDSON: X-rays and photographs do those things. Take a gross picture of a heart, make a lantern slide and throw it on the screen and you will see things which escape you in looking at the heart itself.

DR. HOLMES: Did that process in the lung come from the lymphatics or the blood stream?

DR. RICHARDSON: This particular tumor looks as though it went by the lymphatics.

DR. HOLMES: Some tumors are more likely to come through the blood stream. Most of the carcinomas come through the lymphatics. I know they do not always.

DR. RICHARDSON: That is the old tradition and belief, that sarcomas metastasize through the blood stream and carcinomas by the lymphatics.

DR. CABOT: It is still a mystery why he had epigastric pain. Appendicitis often does show epigastric pain, I suppose from gastric spasm, and it is interesting to wonder whether carcinoma of the appendix could cause spasm.

CASE 11512

MEDICAL DEPARTMENT

P. I. A married woman of fifty entered October 16 complaining of headache.

From childhood until her menopause she suffered from periodic attacks of severe head-

ache, the pain being worst in the frontal region but involving the whole head. It was described as splitting, with throbbing in the temples. The attacks would come on abruptly any time day or night, and would last several hours. There was no preceding aura or visual disturbance. Accompanying the headache there would be nausea and vomiting. The attacks were sufficiently severe usually to send her to bed for twenty-four hours. They came on once a fortnight or oftener. When occurring with her catamenia they tended to be most severe. During her pregnancies, of which there were ten, the attacks would stop. As she grew older they became fewer, and finally ceased altogether at the time her menopause began, four years ago.

Shortly after this, however, a new type of headache began which has been becoming increasingly bad for three years and of daily occurrence for the past year. These also are generalized. They usually wake her about four a. m. and are severe and boring in character and accompanied by pounding in the ears and sometimes by blurred vision. These headaches will last indefinitely unless stopped by medicine.

Still a third type of headache has been present for the past year, like the first a periodic affair, coming once or twice a month, but less severe and if she remains quiet not troublesome; not localized but accompanied by dizziness, nausea and vomiting. Excitement or fatigue tend to bring these on. They are not relieved by medicine, but in the course of a few hours to a day pass off.

For these various headaches the patient has taken much medication. Aspirin and various sorts of headache powder were taken for the original periodic aches, among others the Nervease Headache Powder, said to contain four and a half grains of acetanilid. For years she has taken these, but up to the past year never more than one or two a week. During the past year the powders have been taken practically daily, one or two a day.

The only symptoms besides the headaches are, during the past year, a little palpitation, tachycardia and feeling of faintness toward evening on the days when she had taken two headache powders. No angina, dyspnea, cough, sputum or edema. Her appetite is good. Her bowels are regular. Once a week she takes salts. She has been obese for years, average weight being 200, greatest 245, present 205.

F. H. Her father died of apoplexy, her mother of heart failure. Both were subject to sick headaches. Three siblings living and well; two died of kidney trouble. All except one brother have had headaches.

Marital History. Married twenty-eight years. Husband living and well. Nine chil-

dren living and well. Two died in infancy. One miscarriage (seventh pregnancy).

P. H. Measles, mumps, chickenpox, and many attacks of peritonsillar abscess in childhood. Pertussis after growing up. Four or five head colds yearly.

P. E. An obese woman of fifty with pasty skin and dusky mucous membranes which give a suggestion of a brownish tint. Pupils normal. Teeth false. Ears, nose, tongue and throat not remarkable. Slight fullness of thyroid. Lymph nodes not enlarged. Spine shows a slight upper dorsal kyphosis. Breasts negative. Heart slightly enlarged to the left (left border of dullness 12, midclavicular line 9). Soft apical systolic murmur. Marked increase in aortic second sound. Arteries somewhat thickened. Blood pressure 190/115. Abdomen negative save for obese wall. Extremities and reflexes negative. Pelvic examination, slight cystocele, lacerated cervix, slight prolapse of uterus, slight external hemorrhoids.

Laboratory. Blood, 4,000,000 to 4,200,000 reds, hemoglobin 70 to 75 per cent., leucocytes 6,500 to 7,100, polynuclears 63 per cent., lymphocytes 34 per cent., mononuclears 3 per cent., slight achromia, platelets normal. *Urine*, no albumin or sugar at two examinations, specific gravity 1.022 to 1.030. Sediment, a few squamous cells, leucocytes and red cells, no casts. *Stool* not remarkable. *Blood Wassermann* negative. *Red test* 30 per cent. *Non-protein nitrogen* 25 mgm. per 100 c.c.

Subsequent course. The patient remained in the ward for six days, during which time she had no medicine and no headaches. The fundi were examined and found normal, as too were the visual fields. The blood pressure came down to 150/105. She was discharged on October 31.

DISCUSSION

BY DR. JAMES H. MEANS

NOTES ON THE HISTORY

We thought that these headaches were probably migraine—whatever that may be. They are not absolutely characteristic, but they were definitely periodic; they began in childhood; they were not hemicrania as migraine often is; they were associated with nausea and vomiting, as is migraine; and there was the "splitting" character. They did not have the visual manifestations that sometimes precede the migrainous attack.

I may add that the menopause began four years ago and was complete two years ago.

The third type of headache sounds a little like the first, but the patient insisted that they were different, and we called it a third type

because of her statement. We did not make a diagnosis of the exact nature of these last two headaches that have been present, one for the last three years and one for the last year. We suspected that they might be connected in some way with the hypertension which we later found her to have.

Some of her family apparently had headaches of much the same type as her early ones, and we thought they too were migraine. It is of some interest to note that fact, because migraine is supposed to be oftentimes a hereditary affair.

The apparent discrepancy in the matter of pregnancies is because she had two pairs of twins.

NOTES ON THE PHYSICAL EXAMINATION

The mucous membranes had a very unusual and striking color.

One or two other examinations were made that are not noted here that are important. One is an X-ray picture of the head, which apparently does not show any cause for headache. There is a slight abnormality that is presumably insignificant in the sella turcica, and nothing about the skull itself or the sinuses that would be a cause for headache.

The most interesting laboratory examination was the examination of the blood for methemoglobin. Some of the blood was put in a test-tube, the test-tube was filled with oxygen, and the tube rotated until the blood became saturated with oxygen. This was then compared with the blood of a normal person similarly treated. There was a very definite difference in the color of the two samples, the normal having the ordinary scarlet color of oxyhemoglobin, and the other a perfectly definite brownish tint. Dr. Chester Jones examined some of this with a spectroscope and found the characteristic spectrum of methemoglobin.

Our diagnosis was migraine; hypertension and obesity; cardiac hypertrophy secondary to the hypertension; chronic acetanilid poisoning; and methemoglobinemia.

DIFFERENTIAL DIAGNOSIS

In differential diagnosis causes for headache were considered. Syphilis was excluded. Tumor of the pituitary was considered, and that is why the X-ray was taken. Sinus disease was ruled out we thought. Chronic nephritis was ruled out by the essentially negative urinary findings and the blood chemistry. And we felt that hypertension is capable of accounting for such a headache. I have looked up one hundred cases of hypertension and find that something over eighty per cent. have headache of some kind. There is a great variety in the types of headache, but headache of some

sort seems frequent. The circulatory system in the present case seemed to show no other evidence of disease than ventricular hypertrophy.

The points I wish to make are the following:

(1) The connection between obesity and hypertension is of some consequence. Obese persons are more likely to be hypertensive, although we see persons of normal weight who are. But there is some connection between the two and a certain amount of evidence to show that weight reduction is helpful in the management of hypertension.

(2) A much more important point is this, and it is my chief reason for presenting this case: the matter of taking headache powders over a long period of time and its possible injurious effect. This woman had taken the drug, acetanilid, for a year. It had relieved her headache when taken for a short time, but had really accomplished nothing in relieving the incidence of her headaches. She suffered just as frequently. So that it was not getting her anywhere in particular, and our blood examination showed that it was doing her an injury because she had this abnormal hemoglobin in her blood. Methemoglobin is a stable compound of hemoglobin. It is produced by various coal tar drugs such as acetanilid, antipyrin, phenacetin, and that sort of thing. It means that a certain amount of the individual's hemoglobin is put out of commission so far as it is of any use to the organism. It can no longer transport oxygen, and if the process went to the extent of ruining, say a quarter or more of the total hemoglobin it would amount to an anemia of the same degree, and we know that chronic anemia is to a certain extent injurious *per se*.

(3) The next point of interest is the cessation of her headaches when she stopped taking medicine. Of course we observed this case for only a week, and I would not venture to say that the relief will be permanent. But we have observed certain other cases where there has been permanent relief. Certain persons suffering from chronic headache are undoubtedly made worse by taking drugs. I recall a doctor's wife whose husband had been giving her all kinds of drugs to stop her headache. It stopped almost entirely when Dr. Edsall stopped all medication. Last summer Dr. Beck had a case which I saw in consultation in which there was a similar situation. This was a doctor, and the relief from headache has been maintained for three or four months now. This patient was sixty-eight years of age, a very busy practitioner, who had had headaches for a good many years. They often waked him from sound sleep. For a year he had been working very hard and had these headaches every day. They had been very bothersome and made it

hard to carry out his work. For a year he had been taking five grains of phenacetin daily. His headaches were apparently made worse by hot weather. In July he added five grains of pyramidon and half a grain of caffeine to his daily ration of drugs. Finally his family took him down to Bass Rocks, where he stayed for a week, keeping on with his medicines, and although he rested he got worse. Then he came to the Phillips House and for the first day was given thirty grains of triple bromides three times. On the second day he had two doses, the third day one dose, and after that he had nothing. And that man has had no headaches since. We have heard from him recently. I expect that this woman is going to do the same thing.

I do think that a great deal of harm is done by the continued use of drugs designed to stop chronic headache, and that these two cases are beautiful illustrations of the improvement that can be secured by stopping all medication.

Otherwise about the treatment in this case I see nothing very definite to do except to reduce her weight, which I think is very important. I think that in a good many hypertensive obese persons the pressure goes down with the weight and they feel a great deal better. And if the pressure came down that in itself might contribute to the relief of her chronic headache.

DR. CABOT: What is the relation between obesity and hypertension?

DR. MEANS: I have no idea, except that I am sure from statistics that there is a relation. I feel rather pleased if I find a hypertension patient is obese, because then I feel that there is something I can do about it.

DR. CABOT: Did Dr. Beck's patient have methemoglobin?

DR. MEANS: I do not know. It was not tested for. But he did not have it to the extent this patient had, because he did not show the color. It shows in the mucous membranes and in the conjunctivae. It is a peculiar dusky color, hard to describe but quite striking. It is different from an ordinary cyanosis. It looks like a cyanosis that is a bit off color in the brown direction. I cannot describe it any better.

DR. CABOT: This case interests me very much for two reasons. In the first place I have seen one exact duplicate of it with permanent relief from stopping acetanilid, and I feel sure of the importance of emphasizing exactly what Dr. Means has said about the stopping of pain with the stopping of drugs. The other point is that I know another exact duplicate of it, where the patient never took any drugs at all, has no nephritis and no hypertension and nothing else. As you read the history it was quite astonishing to me how closely it is the

duplicate of this case I am thinking of, who had migraine for years, still occasionally has it, has this early morning headache almost daily, with no drugs, no hypertension, no nephritis and nothing to cure it.

DR. MEANS: Did her migraine stop during pregnancy or terminate with the menopause? I think that is an interesting point. It makes it seem as if there was some endocrin connection.

DR. CABOT: The patient I speak of was never pregnant, and had diminution of the migraine with the menopause. There are two other cases in her family that stopped completely with the menopause. We must think there is some endocrin connection.

DR. MEANS: In certain families in which the rare disease familial periodic palsy occurs some of the individuals have attacks of that syndrome alternating with migraine.

A PHYSICIAN: Has pituitrin been tried at all in this case?

DR. MEANS: No.

A PHYSICIAN: Do you have knowledge of this individual's headaches beginning at the time the mother's stopped? I picked that up from Dr. E. W. Taylor.

DR. MEANS: About the time that the mother has the menopause the child would be coming along to the age of puberty? That would be about right, because I think it begins usually in late childhood.

DR. CABOT: Migraine is a classical example of a disease of which, so far as I know, we have made no progress in treatment during the whole history of medicine.

LATER NOTE

November 21, three weeks after leaving the hospital, the patient wrote that she was feeling very much better. She had had only four morning headaches, only one of which was severe. She had taken two aspirin tablets for this one, one for each of the others. She had taken no more powders.

DR. JAMES H. MEANS'S DIAGNOSIS

Migraine.
Hypertension.
Obesity.
Cardiac hypertrophy secondary to hypertension.
Chronic acetanilid poisoning.
Methemoglobinemia.

CASE 11513

SURGICAL DEPARTMENT

A man seventy-two years old, formerly a painter, entered April 29 complaining of palpitation, dyspnea on exertion, constipation,

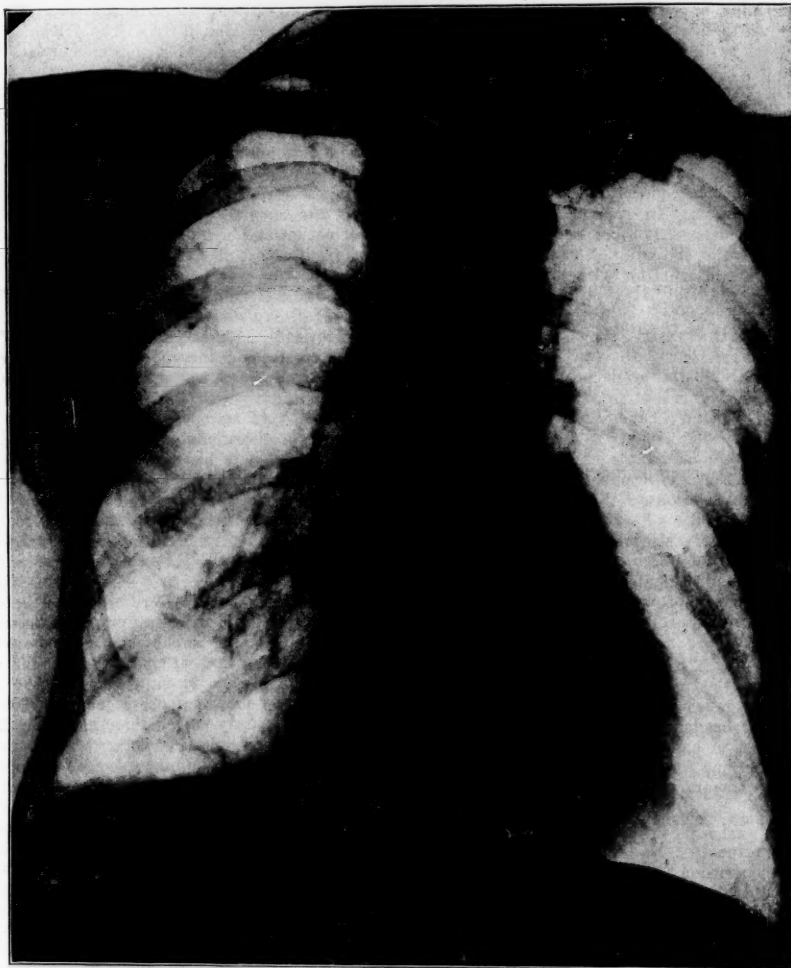
dysuria and nervousness. His mother and one sister died of tuberculosis. The patient was exposed. At forty-two he had pleurisy with effusion. At forty-seven he fractured a femur. His bowels had "always" been constipated. Ten years before admission he weighed 125 pounds, his best weight. He now weighed 110 pounds. There had been no rapid loss. He gave the impression of being a conscientious person with adequate cause for worry. He was unable to find work and was being supported by a welfare organization.

He had always been an active worker. Five years before admission he found that he became dyspneic on ordinary exertion and that his heart beat rapidly and occasionally "skipped." About the same time he also noticed frequency of urination and nycturia. Three years before admission he lost all his money. He found work in a paint shop where the heat was intense. He began to lose strength, but was able at this time to do a full day's work. For a year he was exposed to lead. He now found that he had difficulty in starting the urinary stream. The nycturia and frequency persisted. On examination a large prostate was found. He was advised to have an operation, but refused. A year before admission he lost his work and found himself with his money practically gone. He lay awake, and found that his palpitation, dyspnea and constipation were more marked. He used large quantities of Russian oil. During the past summer, especially in the hot weather, he did not feel well. For seven months his fingers had shown tremor. He became very nervous. Six months before admission he began to raise blood tinged sputum. Five months before admission he awoke from sound sleep and gasped for air. He had had similar attacks about once a week since that time.

Examination showed a poorly nourished man looking ten years younger than he was. The eyes were prominent. The chest showed rosary. The apex impulse of the heart was felt in the fifth space 10 cm. from midsternum, 3 cm. outside the midclavicular line. The right border of dullness was 3 cm., the supracardiac dullness 6.5. The action was regular. The sounds were of good quality. The aortic second sound was accentuated. There was a soft systolic murmur at the apex. The apical first sound was forceful. The lungs showed harsh breathing at both apices with increased dullness at the right apex and a few crepitant râles at the left apex and the right base behind. The breath sounds were diminished at the right base. The dullness was increased over the apex in front. The artery walls were palpable and tortuous. The blood pressure was 160/80—170/90—140/90. The right kidney (†) was palpable. There were large bilateral inguinal herniae. Rectal examination showed

enlargement of both lobes of the prostate, which was soft and not nodular. The dorsalis pedis was not felt in the right foot. There was purple pigmentation of the backs of the hands and on the elbows.

high power field. The renal function April 30 was 15 per cent., a trace of color May 2, 13 per cent. May 17. There was a residual of $3\frac{1}{2}$ to 6 ounces. The blood showed 10,000 to 13,900 leucocytes, 60 per cent. polynuclears,

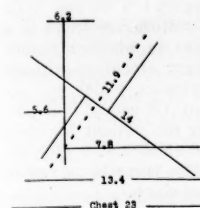


Shows the diaphragm rather flat on both sides, the costophrenic sinuses shallow. Both apices are less radiant than normal. The left is quite dull. The lung markings are prominent throughout both chests. The heart shadow is increased in all diameters.

Before operation the temperature was 96.8° to 99.7° , the pulse 68 to 91. The respirations were normal. The urine was 33 to 62 ounces, the specific gravity 1.020 to 1.016. The catheter specimens showed 10 to 75 leucocytes per

hemoglobin 80 per cent., 4,692,000 reds. The smear was normal. A Wassermann was negative. The non-protein nitrogen was 35 to 41 per cent. The basal metabolism rate was +28 to +15. X-ray showed the diaphragm

rather flat on both sides, the costophrenic sinuses shallow. Both apices were less radiant than normal. The left was quite dull. The lung markings were prominent throughout both chests. The heart shadow was increased in all diameters (see diagram).



atous changes, especially on the left. There were two prominent rounded lobes which resembled stones, but the examiner could get no click. Operation was advised. A medical consultant found no contraindication to operation and pointed out that the patient was well preserved and that the prominence of the eyes was of many years' standing. Under encouragement the patient improved. By May 18 the catheter no longer hurt him and there was satisfactory drainage. The renal function was now 52 per cent.

May 21 operation was done. The next day the condition was very satisfactory. May 25 the tube was removed. The condition was excellent except for a slight cough. May 30 he complained of gas and constipation, although there was no distension. He was taking mineral oil and cascara daily and milk of magnesia every two hours. Nevertheless it was necessary to remove impacted feces mechanically. He suffered greatly from heat. June 6 he died.

DISCUSSION

BY DR. EDWARD L. YOUNG, JR.

Just on the list of presenting symptoms, here is a man who may have anything from a severe heart disease to carcinoma of the colon, to urinary difficulty, and at his age there may be various other conditions. It is important to pick out the one that is the keystone of the arch if we can, in order to help all the others.

The quotation marks mean that the "skipping" is his description of the sensation he got.

I have read this through because it seems to me that this is the type of patient that has a number of different angles from which the problem has to be approached. He has an obstructing prostate. He has damaged kidneys, presumably from that obstruction. It is true that the only cure for that is to remove the residual, but it is possible to do that with a catheter life, although that is not of course so efficient as the removal of the prostate itself. But under cer-

tain conditions it may well be that catheter life is the best thing for the patient. Discretion is often the better part of valor.

Now there are various other things wrong which it seems to me should demand consultation from experts in their particular lines. The surgeon has him; he has found the prostate. The first question is of the heart. How much, as we read this, does that heart mean?

DR. CABOT: I think people with hearts like that have often gone through operation, if there is need of that. I do not believe it is the prime cause of his symptoms.

DR. YOUNG: I do not see, then, why we should not come a little nearer to operation. There is plus metabolism and he has prominent eyes. Is there anything there from the point of view of thyrotoxicosis that should influence us?

DR. MEANS: I cannot recall ever seeing a patient of seventy-two with exophthalmic goiter. When I saw this man I did not think his exophthalmos was due to hyperthyroidism. I do not think one could make a diagnosis of exophthalmic goiter on the evidence presented here. It is true the first metabolism test was elevated, but there are various things that may raise metabolism. He may not have kept quiet the first time the test was done. He may have some degree of cardiac failure. The second test being lower would seem to show that after we really got him quiet the basal level was not far from normal, and that would be strong evidence against any real hyperthyroidism. Therefore in answer to the question, I should say there is no contraindication to operation. As I look at the history, his pulse has never been over ninety, the average being eighty; this too is against thyrotoxicosis. I fancy his exophthalmos was what we sometimes see in arteriosclerotic or cardiorenal patients.

DR. YOUNG: Then we are coming a great deal nearer to operation. We are dealing with a man of seventy-two, and the risk of operation is greater than the risk in a younger man. We should always remember that urinary symptoms such as are usual in cases of obstructing prostate can be due merely to hypertension and cardiorenal disease. If his low function is due to renal disease rather than to the back pressure of an obstructing prostate it will do no good to give relief to that back pressure. But on the basis that the prostate is the most important thing here and is causing much of the trouble he was put on drainage.

A renal function of fifty-two per cent. is good evidence that the damage which has been going on, which threw his renal function down and resulted in a high normal blood nitrogen, was due to the back pressure of the obstructing prostate, because the relief of that was followed by the

improvement of the kidney function. So we have every reason to believe that in spite of the risk the best treatment for this man is operation and not catheter life.

Of course there is a certain inevitable mortality to prostatectomy because of the age of the patients and the changes which have inevitably taken place in the whole system. Here he has had drainage, which has brought his kidney function up practically to normal. The question is whether to do a one or a two-stage operation, and if one-stage, a perineal or suprapubic. It would depend on the individual to a large extent. With a nervous type of patient if a one-stage operation can be done it will help tremendously, and it would seem to me as if this would be a good case to do a perineal operation.

DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Hypertrophy of the prostate.

PRE-OPERATIVE DIAGNOSIS

Hypertrophy of the prostate.

OPERATION

40 c.c. of two per cent. novocain was used for the sacral anesthesia. A curved perineal incision was carried down until the central tendon of the perineum was reached. This was divided and the dissection was carried back until the membranous urethra was exposed. The apex of this was divided upon a sound in the urethra and a prostatic retractor was inserted into the bladder. The posterior layer of Denonvillier's fascia was incised and the base of the prostate exposed. A V-shaped incision was then made into the apex of the prostate and the gland excised by finger enucleation. A catheter was then put through the urethra into the bladder and fastened to the glans with a silk stitch. A perineal tube was then inserted into the bladder through the perineal wound and a large Miller wick placed in the wound. The levator ani muscles were then drawn together and the wound closed.

PATHOLOGICAL REPORT

A plum-sized nodule showing on section a white, spongy, lobulated surface.

Microscopic examination shows hyperplasia and dilatation of the gland tubules. The epithelium shows papillary hyperplasia. The stroma was infiltrated with wandering cells.

Adenomatous hypertrophy.

FURTHER DISCUSSION

That operation carries a very slight shock, and it would seem as though this man ought to get along well.

I do not think that we can say from this rec-

ord why he died, but it simply emphasizes the risk that there is in a man of seventy-two putting himself through any operation.

A PHYSICIAN: How common is pulmonary embolism?

DR. YOUNG: You mean in prostates as against other types of surgery? I do not think it is any more common. Moreover there is a standing discussion here as to whether or not a man can die of pulmonary embolism without symptoms, particularly cyanosis, which call attention to what is going on. Of course it is possible for no one to be near the patient for some time, and for him to die suddenly. But assuming that anyone saw him there is no reason to think of pulmonary embolism.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Adenomatous hypertrophy of the prostate.

Arteriosclerosis, general.

Uremia.

Bronchopneumonia.

Operation, perineal prostatectomy.

DR. EDWARD L. YOUNG'S DIAGNOSIS

Adenomatous hypertrophy of the prostate.

Arteriosclerosis.

ANATOMICAL DIAGNOSIS

1. Primary fatal lesion

(Adenomatous hypertrophy of the prostate.)

2. Secondary or terminal lesions

Prostatectomy.

Ascites.

Arteriosclerotic degeneration of the kidneys.

Arteriosclerosis.

Edema of the lungs.

Purulent bronchitis.

Soft spleen.

3. Historical landmarks

Slight hypertrophy and dilatation of the heart.

Chronic pleuritis.

Foci of obsolete tuberculosis of the lungs.

DR. RICHARDSON: We were not permitted to examine the head. There was the operation wound in the perineum. The abdomen was slightly distended, but the wall was negative.

The outstanding conditions in this case were in the first place very well marked arteriosclerosis involving the aorta and great branches,—that is a general arteriosclerosis.

The heart weighed 340 grams. For him it was slightly enlarged. The valves were negative. There was slight dilatation on the right side. The myocardium was negative both macroscopically and microscopically.

The liver, gall-bladder, bile-ducts, pancreas, duct of Wirsung, the spleen and adrenals were frankly negative except that the splenic tissue was a little soft.

In the apices of the lungs there were some patches of obsolete tuberculosis. We see that once in a while,—obsolete tuberculosis in the apices and nothing found in the glands. The lungs themselves showed considerable edema, and the trachea and bronchi contained much mucus which exuded from the cut ends of the finer bronchi in the section surfaces.

The kidneys were rather small. One weighed 125, the other 145 grams. The capsules came off all right. The surfaces were pale. The tissue itself showed some slight increase of consistence, and the vessels in the cut sections were rather prominent. The cortex was two to four millimeters, which is rather narrow. The whole picture was of arteriosclerotic degeneration macroscopically. Microscopic examination showed the same thing.

The trabeculae of the bladder were hypertrophied, and there were a few small shallow diverticula between them.

The prostate was wanting, and in its situation there was a thickened fibrous shell. The inner surface was irregular and presented several small pockets, in some of which there was a very small amount of purulent material.

DR. CABOT: Why did he die?

DR. HOLMES: Does anybody think now that he had hyperthyroidism?

DR. MEANS: I do not.

DR. CABOT: He should have had a little X-ray of his thyroid.

DR. HOLMES: He has a number of symptoms,—the complaining of heat, the plus metabolism, the tremor.

A PHYSICIAN: Why do so many old men die after prostatectomy?

DR. YOUNG: As a rule from one of three causes: (1) hemorrhage, which is largely eliminated today; (2) renal insufficiency, which we try to eliminate by drainage before operation; (3) infection. And of course we do find patients,

as here, who just die. They are seventy-two more or less years old by years, a fact which is important, as that may hide some weak point. They haven't any reserve in some spot, and we upset the balance and they slip over the edge. When I was a house officer we expected half of them to die, and I have heard general practitioners outside say four out of five. Today I do not know what the average would be with a large number of general surgeons, but I know it is down to at least five per cent. in the hands of surgeons who are doing a great deal of prostatic work. It is due to drainage so the kidneys can come back to normal, and due to the control of hemorrhage and in general the care of details. The control of hemorrhage helps to lessen infection, because an amount of blood which will not in itself be sufficient to kill a patient will be enough to lessen resistance so that infection comes in more easily.

A SURGEON: Do you think that on an arteriosclerotic background he has enough infection?

DR. YOUNG: I think that is a factor. I don't think we can lay our fingers on any one thing.

DR. CABOT: If he had been given ether we should say he had ether bronchitis.

DR. YOUNG: We do see it, however, after local anesthesia almost as frequently.

DR. CABOT: I get the impression that if this old man had been jollied along, had not been so worried about his money and nobody had operated on him, he might have been alive and happy today.

DR. YOUNG: The basis of operation versus catheter life. With the average patient, although his life may be prolonged, it will not carry him more than three or four years, and it is never a happy life. So that we prefer the operation if we have a reasonable chance.

DR. CABOT: You have not changed your mind at all about his thyroid?

DR. MEANS: No. There are not enough data to make the diagnosis of exophthalmic goiter. The note in the record is that he had the exophthalmos a great many years. There is no tremor and no goiter. He has a rise in metabolism so trivial that it could easily be explained in other ways. I do not regard the evidence as sufficient. Besides, it would be very unusual at his age.

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ANOTHER VERDICT AGAINST THE STREPTOCOCCUS

THE organism of encephalitis lethargica, according to *Science* of November 20th, has been identified by Miss Alice C. Evans of the United States Hygiene Laboratory as a streptococcus, so variable in size that it is at times microscopic and at times so small as to pass through the finest filter. This streptococcus was first isolated from the brain of a patient dying of encephalitis at St. Elizabeth's Hospital for the Insane in Washington, was cultivated in the test tube, and used for the inoculation of rabbits. Encephalitis was contracted by the animals, and the organism recovered in quantities from the brain after death. Koch's postulate thus seems to have been fulfilled with this organism. Small doses were moreover found to confer a partial immunity.

Bacteriological research seems to have been meeting with unusual successes in recent years; the just rewards of long and patient investigations. Final proof of the true etiology of scarlet fever heads the list in importance, of course, and particularly through the elaboration of a technique of antitoxin production. That scarlet fever is caused by a streptococcus was long ago shown to be a probability by Mooser and Mar-

moreh, but it remained for Dochez and the Dicks to demonstrate this beyond a doubt.

Considerable confusion still exists as to the etiological agent of influenza and the part, if any, played by Pfeiffer's bacillus; it is three years since Plitsky and Gates demonstrated bacterium Pneumosintes as the virus of the disease, and recently little has been published concerning this discovery. A lack of chemical material unquestionably hinders research along this line, but it is to be hoped that another epidemic will not be necessary to further the studies.

The importance of the streptococcus as a disease producer is brought more and more forcibly to the attention of the casual medical readers by the varied list of infections that are apparently due to it, and it is becoming increasingly apparent that the name is but a family one, based almost entirely on morphologic characteristics. The evidence in favor of Rosenow's views on specificity is growing. This worker remains convinced, although scientists as a whole have not accepted it as a fact, that a strain of streptococcus is responsible for the rheumatic infection, including chorea. Certainly no one would be surprised at any type of further incrimination of this organism.

The proof of the pudding, in the last analysis, is in the eating, and we have become so blasé as to remain relatively unmoved by any new discovery in bacteriology until the immunologists have put the knowledge gained on a working basis and produced a therapeutic agent. Thus even the most hard-boiled critic relaxes and emits three feeble cheers.

BOSTON LEADS THE COUNTRY IN HEALTH SERVICE

A SURVEY conducted by the American Public Health Association gives Boston a rating of 898 out of a possible 1000 points in measuring the resources of health work in the cities of this country. Special activities warrant a further credit of nine points bringing the total up to 907.

An especially creditable feature of the Boston work is that of concentrated attention to the care of the pre-school child by both official and voluntary agencies. The personnel of the agencies employed by the Boston Health Department is augmented by representatives of the Harvard, Tufts and Boston University Medical Schools under the supervision of the professor of pediatrics of the respective schools. The City pays the medical schools for the service rendered.

The total credit will be announced after the receipt of definite advice regarding Boston's water supply.

This statement will be appreciated by the citizens of Boston and should lead to further cooperation with and endorsement of the Commissioner of Health.

THE POSITION OF COMMISSIONER OF PUBLIC HEALTH OF THE CITY OF BOSTON

THERE seems to exist in the minds of some persons the idea that a medical journal may not with propriety express opinions relating to the appointment of a health commissioner. This JOURNAL has taken the position of commenting on the subject as it applies to the City of Boston because it is felt that any part of the question is significant in dealing with health, which is conceded to be the most important factor in promoting human comfort and efficiency. It is a distinctly medical question because it deals with the prevention of disease which is of far greater value than curative medicine. Even if several individuals were under consideration, a medical journal could properly express opinions if founded on the broadest conception of the greatest good to the greatest number and devoid of personal bias.

Lay publications do not hesitate to express opinions about possible appointees or even to criticize the selection of officials. We assume the same prerogative and contend that there are questions relating to this appointment which are broad and far reaching and must take into consideration policies which apply to the future as well as to the present time.

In support of our position and with the consent of the authors, we are pleased to present copies of letters which have been forwarded.

Boston, November 9, 1925.

Dear Dr. Shattuck:

I am very glad to learn that the Health League is making an effort to see that the City Health Department is put upon a plane outside partisan politics. I think the people of this country as a group have very little conception how much the political element in Public Health work has interfered with, and continues to interfere with, giving them satisfactory Public Health service. It is, of course, obvious that this is true if it results in the removal of an effective health officer and his replacement by a person of inferior capacity but more political influence at the moment.

But there is another side of it that is even more significant as regards proper service to the public, namely in attempting to encourage able young men to go into Public Health work, great difficulty is encountered chiefly in the fact that they have great fear and they believe entirely justified fear, of the insecurity of the work because of political influences. Nothing will serve so largely to increase the number of able and effective men in Public Health work as a sense that duration of office and appointment to office will depend upon ability and training rather than upon partisan influence. This, at present, is a matter of very grave significance in the effort to improve municipal or state health service, and I trust that here in Boston we may be looked upon as amongst the increasing numbers of communities that are getting their health service out of politics.

I am also most heartily in sympathy with the increasing coöperation between the private and public agencies in combining work for the city's health and I believe that the increasing development of

the health centers and the child welfare programs of the Health Department of the city have been already so very encouraging that they are looked upon here and elsewhere in this country as being likely to be valuable examples for other communities to follow. They have also aroused a good deal of interest on the part of the numerous persons from foreign countries who have in the past two or three years visited this country in relation to public health matters and whom I have had occasion to see.

Very sincerely yours,

(Sgd) DAVID L. EDSALL, Dean.

November 21, 1925.

Dear Dr. Shattuck:

I shall be very happy to endorse your desire to have Mayor-elect Nichols continue the services of Dr. Mahoney in whom I have the greatest confidence. I shall be glad to speak to the Mayor-elect when an opportunity presents itself but in the meantime you have my permission to quote me.

Sincerely yours,

(Sgd) FELIX VORENBERG.

Boston, November 19, 1925.

Hon. Malcolm E. Nichols,
18 Tremont Street, Boston, Mass.

My dear Mr. Nichols:

The health activities of the City of Boston will naturally be one of the primary considerations of your administration. Those of us who are most interested in these activities realize the paramount importance of continuity of service in the Health Department which shall be uninterrupted by the change in political administration. It will be a long step in this direction if you can see your way to reappoint the present Commissioner. Dr. Mahoney is engaged in the development of many wise and very reaching policies and I believe his record has won for him the support of the Medical and the Public Health professions.

From the standpoint of a private citizen professionally interested in the promotion of the Public Health, may I take the liberty to urge the reappointment of Dr. Mahoney.

Very respectfully yours,

(Sgd) C. E. TURNER.

Boston, November 12, 1925.

The Hon. Malcolm E. Nichols, Mayor-Elect,
Boston, Mass.

Dear Sir:

Let me first say that no election in the City of Boston has pleased me so much as yours, for very many years. I make this statement because I am about to say also that I think the Health Program of your predecessor has been remarkably good and I feel sure that we may look forward to an even more constructive one.

It has been my pleasure to be on the Mayor's Advisory Committee to the Commissioner of Health, and for many years I have been interested in the Boston Health League, that quiet and unobtrusive organization which coordinates all the health agencies in Boston, both public and private, and behind the scenes is responsible for initiating and fostering much of the health work which has made Boston stand so high in a comparative review of health activities of different cities made by an impartial observer.

I think the present Health Commissioner has tried extremely hard to do his duty without thought of its political significance. The City Health Department has made a very important move in taking over the Baby Hygiene work of the Community Health Organization. Dr. Willinsky, the Head of

the Department, is one of the most open-minded and devoted public servants that I know. His work with the Health Centers under the White Foundation, and even before this with the Blossom Street Health Center, has become almost a model which different cities are adopting.

Respectfully yours,
(Sgd) ROBERT B. OSGOOD.

Boston, November 30, 1925.

Hon. Malcolm E. Nichols, Mayor-Elect,
Boston, Mass.

Sir:

May I commend to your attention the organized effort that is being exerted on the part of the Boston Health League, Inc., for the purpose of clarifying the problems of the City Health Department. May I also ask your support in the carrying out of certain policies now being initiated in the City of Boston for cooperation of the various health agencies, with particular reference to the development of the Health Center and Child Welfare programs.

It is my personal opinion, from what I know of these plans, that they should yield beneficial results in the ends for which they are designed. Just as we endeavor to elevate the school committee elections to the plane of nonpartisan politics, so should the problems of health be similarly placed upon a better and more comprehensive plane of efficiency.

It may not be possible to carry out in full measure all the details of this campaign, but suggestions of this kind should tend toward cooperation and unanimity of results.

Very respectfully yours,
(Sgd) BENJAMIN C. WOODBURY, President,
Boston District, Homeopathic Medical Society.

November 16, 1925.

Mayor-Elect Malcolm E. Nichols,
Boston, Mass.

Dear Sir:

Through my friends in the Boston Health League I have learned that the present Commissioner of Health of Boston, Dr. Francis X. Mahoney, has been most cooperative in his relations with the Boston Health League.

He has also built up the Boston Health Department along lines which have removed it from the political field and made it a credit to our city. It seems to me that a continuation of his policy in these health problems is exceedingly important, and so I am taking the liberty as a physician of Boston to write to you and to urge the continuation of the present policies of the Boston Health Department. I believe that Dr. Mahoney has shown his ability to carry out these policies.

Sincerely yours,
(Sgd) C. FROTHINGHAM.

Boston, November 9, 1925.

Hon. Malcolm E. Nichols,
My dear Sir:

The cause of public health has many ardent supporters in theory. Those who are interested in and close to public health know too well how little practical support there is. Of recent years there has been a novel experiment in Public Health in the City of Boston. This has consisted of an attempt to secure cooperation between the private agencies doing health work in the City and the Department of Public Health. In the main this experiment has succeeded remarkably and the former overlapping of various activities and the former huge gaps between the various activities have largely been re-

moved. In consequence of this cooperation the programs of Health Centers and Child Welfare have had an extraordinary development in Boston, and are now the object of attention not only in the United States, but abroad. The public health situation in Boston now needs some practical support. When the inevitable question arises of continuing the same personnel in the Boston Department of Public Health, if the unfortunate practice of routine in office is adhered to, then it will be a very discouraging outlook indeed for the public health, which will doubtless continue to receive much theoretical support, even when the practical support is denied it. As far as I know the appointment of Dr. Francis X. Mahoney was a partisan political appointment. I have seen a great deal of Dr. Mahoney; I have served on committees with him. Dr. Mahoney undoubtedly has his faults, his limitations. It is my opinion that Dr. Mahoney is at the present time, the best man for the Public Health Commissioner of the City of Boston. I believe that his appointment would do more for the cause of Public Health than any other one measure at the moment. I write this, as I hope you will understand, much more in the interest of public health in general and Public Health of Boston in particular than in personal interest in Dr. Mahoney.

Sincerely,
(Sgd) ROGER I. LEE.

THE MATERNITY AND INFANCY LAW

The law enacted by the passage of the Shepard-Towner bill will come up for re-enactment next year. It will have covered the period designated in the act.

Forty-three states have accepted the provisions of the law. Massachusetts, Connecticut, Illinois, Kansas and Maine have not co-operated. The claims which have been made for its benefits are many and a strong effort will be made to secure the passage of the same act for another period.

The recent report of the Children's Bureau sets forth the activities developed under the operation of the act and efforts are being made to interest the people in work done and contemplated.

We are still unconvinced that the policy of raising funds by taxation in one State should be applied to health work in another state except under the broad functions of the Federal Public Health Service. Arguments have appeared in some newspapers in favor of re-enactment of this law. Differences of opinion exist in those states which have not seen fit to accept the government subsidy. Government bureaus are inclined to use efforts designed to perpetuate existence. We may see considerable activity in Massachusetts, Connecticut and Maine designed to promote the re-enactment of this law and bring these states into harmony with its purpose. It will be incumbent on those who are not favorable to keep informed about the propaganda put forth. Since the arguments in favor of the act involve medical problems, medical societies may very properly take action.

THIS WEEK'S ISSUE

Contains articles by the following named writers:

EMERY, EDWARD S., Jr., A.B., M.D. Harvard Medical School 1920; Assistant in Medicine, Harvard Medical School; Junior Associate, Peter Bent Brigham Hospital. His subject is "The Treatment of Gastric and Duodenal Ulcers."

JACKSON, ARNOLD S., B.A., B.S., M.D., M.S. in Surgery, Mayo Foundation. His subject is "Iodin Hyperthyroidism—An Analysis of 50 Cases."

ROBERTS, STEWART R., A.B., B.S., M.S., M.D. Atlanta College Physicians and Surgeons 1900; Professor of Clinical Medicine, Emory University School of Medicine; Formerly President, Southern Medical Association; Atlanta Heart Club and other organizations. Also formerly Lt. Col., M.C., U. S. A. His subject is "William Charles Wells of Charleston and London."

ADAMS, JOHN D., M.D. University of Vermont College of Medicine; F.A.C.S.; Chief Orthopedic Surgeon, Boston Dispensary; Consultant to Beverly Hospital, Jordan Hospital, et al. His subject is "The Present Status of Occupational Therapy in the Hospital Curriculum."

STONE, JAMES S., A.B., M.D. Harvard Medical School 1894; F.A.C.S.; Surgeon, Children's Hospital, Boston; Instructor in Surgery, Harvard Medical School; Member, New England Surgical Society; President, Massachusetts Medical Society. His subject is "Report of a Case of Volkmann's Contracture Involving the Pronator Quadratus."

STEVENS, HORACE P., A.B., M.D. Harvard Medical School 1906; F.A.C.S.; Visiting Surgeon, Cambridge Hospital. His subject is "Preparation of Patients for Anaesthesia."

MORSE, JOHN LOVETT, A.B., A.M., M.D. Harvard Medical School 1891; Professor of Pediatrics Emeritus, Harvard Medical School; Consulting Physician, Children's and Infants' Hospitals, Boston; Member, American and New England Pediatric Societies and Association of American Physicians, et al. His contribution is on "Progress in Pediatrics."

MISCELLANY

SCHEDULE OF WINTER TRAINING FOR OFFICERS OF THE MEDICAL RESERVE CORPS, BOSTON AND VICINITY, 1925-1926

The following is the program arranged for Reserve officers of the Medical Department in Boston and vicinity. The meetings will be

held at 9.00 P. M., in the Medical Library in the Fenway, just off Boylston St., on the following dates.

All officers of the Medical Department of every branch and regardless of assignment to organization are cordially invited to attend these meetings, take part in the discussion and aid in adding to the success of the work so well begun in the meetings of 1924-1925.

Every officer is urgently requested to so plan his work that he can attend the maximum number of meetings.

Unit commanders of all commands no matter how small are requested to urge all officers under their command to attend these meetings. All the line organizations are now carrying on along this line and let us of the Medical Department redouble our efforts that we may maintain the high standing we have always enjoyed.

The wearing of the uniform at these meetings will be optional.

DECEMBER 16, 1925

*Mobilization of the Medical Department—*Texts: National Defense Act—A. R. 120-10-135-10—Tables of Organization, War Department—Corps Area Mobilization Plans.

*Promotion Requirements—*Texts: A. R. 150-5, 140-21, 140-33. Lieutenant-Colonel Charles F. Morse, M.C., U. S. A.

JANUARY 13, 1926

*The Service of Medical Detachments with Troops on the March, in Camp and in Combat—*Texts: Army Medical Bulletin No. 14, Chapters IV to XVIII inclusive except Chapter X. Major Edgar F. Haines, M. C., U. S. A.

*The Medical Regiment—*Texts: Army Medical Bulletins No. 13 and 14. Colonel Alexander S. Begg, Med.-RES.

FEBRUARY 10, 1926

*Military Hygiene and Sanitation—*Texts: Army Medical Bulletin No. 15—T. R. 112-5, 113-5. Lieutenant-Colonel William J. L. Lyster, M. C., U. S. A.

*The Staff Service of Medical Officers—*Texts: A. R. 40-10—Army Medical Bulletin No. 14, Chapters III and XXV—Army Medical Bulletin No. 15, Section III, Chapter I. Colonel George F. Keenan, Med.-RES.

*Military Administration, Customs of the Service and Courtesies—*Texts: A. R. 40-5, 600-10, 600-15, 600-25, 600-30, 600-20, 605-110, 605-115, 605-120, 605-125—Army Medical Bulletin No. 10. Lieutenant-Colonel Peter C. Field, M. C., U. S. A.

MARCH 10, 1926

*Procurement, Storage and Issue of Supplies—*General Discussion of Reports and Returns—

Texts from: Miscellaneous Army Regulations.
Captain Herbert N. Dean, M. A. C., U. S. A.

Military Hospitalization—Texts: A. R. 40-580
—Army Medical Bulletin No. 12. Colonel Joseph H. Ford, M. C., U. S. A.

APRIL 14, 1925

Map Reading, Sketching and Field Orders—Texts: T. R. 190-5, et seq.—Army Medical Bulletin No. 14, Chapters XXI & XXII. Major Henry S. Bockford, M. C. (DOL).

A Problem in Medical Department Tactics—Major Henry M. Emmons, Med.-RES.

In the foregoing schedule a list of apposite references is inserted in order to facilitate study of the subjects considered.

It is suggested that each officer should come provided with pencil and note book.

J. H. FORD, *Corps Area Surgeon*.

HANDBOOK FOR HEALTH EXAMINATIONS

REPRINTS of "A Handbook for Health Examinations by Physicians" which appeared in the JOURNAL of November 19 can be obtained at the JOURNAL Office.

Single copies without covers 10c, with covers 15c. In lots of 50 or more uncovered 7½c each and covered 12c each.

RECENT DEATHS

STUDDIFORD—Dr. WILLIAM EMOBY STUDDIFORD, Professor of Obstetrics and Gynecology, Columbia University College of Physicians and Surgeons, New York City, died of heart disease at his home in New York, November 17, 1925, at the age of 58.

He was a graduate of Bellevue Hospital Medical College, New York, in 1891. Fellows of the Massachusetts Medical Society will remember with pleasure the able paper he read before the Section of Obstetrics and Gynecology at the annual meeting of the Society in 1924, entitled the Relation of Obstetrics to Preventive Medicine.

BELL—Dr. RICHARD DANA BELL, Assistant Professor of Biological Chemistry in Harvard Medical School, died at the Deaconess Hospital, Boston, after a long illness, December 6, 1925, at the age of 38.

Dr. Bell was a native of Somerville, where he made his home. A graduate of Harvard in 1908, he took his M.D. from Harvard Medical School in 1913, specialized in chemistry, went overseas as major in the Medical Corps, U. S. A., during the World War, and on returning was made assistant professor in his alma mater in 1920.

He was not married.

Dr. Bell joined the Massachusetts Medical Society in 1914.

WILSON—Dr. CHARLES MOORE WILSON, a Fellow of the Massachusetts Medical Society, formerly city physician of Salem, died suddenly in his office in that city, December 9, 1925, aged 42.

Dr. Wilson was born in Waterford, Me., June 6, 1883, and attended Bridgton Academy and the medical department of Bowdoin College, where he received his M.D. with the class of 1911. He became

an interne at the Salem Hospital at once and later began practice in Salem, becoming a member of the visiting staff of the hospital.

He is survived by his widow, who was Miss Mary Muggah of Salem, and by two children.

OBITUARY

JOHN LEWIS HILDRETH, M.D.

Dr. J. L. HILDRETH died November 27th at Winchester where he had lived since his retirement from practice in 1912. He was born in North Chelmsford, Mass., Nov. 29, 1838. Had he lived two days longer he would have been eighty-seven years old.

Dr. Hildreth sprang from sturdy New England stock. He fitted for college at Appleton Academy, New Ipswich, N. H. He entered Dartmouth College in the class of 1864. Early in 1863 he left college to enter the army. Being rejected as a soldier on account of a suspected heart trouble, he joined the U. S. Sanitary Commission as an inspector of hospitals where he rendered valiant service with Gen. Banks at New Orleans and on his Red River Expedition.

After the closing of the war he was for a time principal of the Peterboro Academy. He began the study of medicine while teaching. The winter of 1865-66 found him at the Harvard Medical School. He received his medical degree from Dartmouth Medical School in June, 1867. He was given his degree of A.B. from Dartmouth as of the class of 1864, in 1879.

After his graduation in medicine he settled in West Townsend where he practised his profession for three years, moving to Cambridge in 1870 where he lived for forty years, becoming very prominent as a general practitioner in the broadest sense of the term.

Notwithstanding his large practice, Dr. Hildreth was a most public spirited man, giving freely of his time and strength to public service. For nineteen years he was a prominent member of the Cambridge School Board. During 1865-66 he was surgeon of the Fourth Battalion and the following year he was medical director of the First Brigade.

From 1886 to the time of his retirement from practice he was on the staff of the Cambridge Hospital. He was the first man to hold the office of Medical Examiner in his district, serving from 1877 to 1882. He was Professor of Clinical Medicine at Tufts Medical School for five years, serving as Dean for three years. He received the degree of LL.D. from Tufts College in 1900. From 1893 to 1898 he was a member of the Massachusetts State Board of Lunacy and Charity. He was a member of many medical societies.

Dr. Hildreth married Miss Aehsah B. Colburn of Temple, N. H., on March 2, 1864. Mrs. Hildreth died some years ago. He is survived by

a son, Alfred H. Hildreth and a daughter, Mrs. Charles E. Barrett of Winchester, also one brother and two sisters.

Dr. Hildreth's life was full of good work well done. He died respected by all who knew him.

E. H. S.

NEWS ITEMS

ANAGRAMS—A bulletin issued by the American Nurses' Association under the title of *Anagrams* is to be published bimonthly in order to disseminate news and useful information to the 51,000 members of the American Nurses' Association.

DR. HENRY JACKSON has moved his office to 51 Hereford Street, Boston.

DR. HOWARD FOX APPOINTED TO FACULTY OF NEW YORK UNIVERSITY MEDICAL COLLEGE—The appointment of Howard Fox, D.B., M.D., as professor of dermatology and syphilology in the New York University and Bellevue Hospital Medical College has been announced by the University Council. Dr. Fox will succeed the late Dr. William B. Trimble, who was a member of the medical college faculty since 1898.

He is president of the American Dermatological Association and former president of the New York and Manhattan Dermatological Societies. He has been chairman of the sections of dermatology of the New York Academy of Medicine and the American Medical Association.

Dr. Fox saw active service in the World War from April, 1917, until August, 1919, and was commissioned lieutenant-colonel in command of Base Hospital 136 at Vannes, France.

HARVARD MEDICAL SCHOOL—The Aesculapian Wives will entertain the Harvard Medical and Public Health Students at a Christmas tea-dance to be held in the Medical School on Saturday evening, December 19.

CONNECTICUT DEPARTMENT OF HEALTH

MORBIDITY REPORT FOR THE WEEK ENDING
DECEMBER 5, 1925

Diphtheria	34	German measles	3
Last week	54	Influenza	11
Diphtheria bacilli carriers	45	Malaria	1
Typhoid fever	9	Mumps	8
Last week	5	Pneumonia, lobar	60
Scarlet fever	64	Poliomyelitis	1
Last week	50	Septic sore throat	5
Measles	115	Trachoma	1
Last week	55	Tuberculosis, pulmonary	19
Whooping cough	80	Tuberculosis, other forms	4
Last week	32	Gonorrhea	33
Bronchopneumonia	48	Syphilis	35
Chickenpox	80		
Encephalitis epidemic	1		

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

DISEASES REPORTED FOR THE WEEK ENDING
DECEMBER 5, 1925

Anterior poliomyelitis	7	Dysentery	2
Chickenpox	270	Encephalitis lethargica	3
Diphtheria	78	Epidemic cerebrospinal meningitis	3
Dog-bite requiring anti-rabic treatment	4	German measles	30

Gonorrhea	101	Suppurative conjunctivitis	5
Hookworm	1	Tetanus	2
Influenza	7	Trachoma	2
Measles	1208	Tuberculosis, pulmonary	105
Mumps	41	Tuberculosis, other forms	19
Ophthalmia neonatorum	21	Tuberculosis, hilum	16
Pneumonia, lobar	136	Typhoid fever	12
Scarlet fever	224	Whooping cough	230
Septic sore throat	2		
Syphilis	32		

NOTICE

THE Massachusetts General Hospital and The Boston City Hospital will notify the BOSTON MEDICAL AND SURGICAL JOURNAL of surgical operations listed each day.

This information will be transmitted to all who may apply by telephone at 9.05 a. m. or later.

REPORTS AND NOTICES OF MEETINGS

THE NEW ENGLAND HEART ASSOCIATION

MEETING at the amphitheatre of the Peter Bent Brigham Hospital, Thursday, Dec. 17, 1925, at 8:15. Subject: "The Blood Supply of the Heart," Dr. Louis Gross, New York.

Discussion to be opened by Dr. Joseph T. Wearn. Doctors, students and all others interested are invited.

S. A. LEVINE, *Secretary*.

BOSTON MEDICAL HISTORY CLUB

THE next meeting will be held at the Boston Medical Library, 8 The Fenway, Monday, December 21, 1925, at 8:15 o'clock.

Speakers: Dr. Stephen D'Irsay—"Patristic Medicine." Dr. Robert B. Osgood—"Masters of Bone and Joint Surgery."

Dr. J. W. COURTNEY, *President*.

Dr. HENRY R. VIETS, *Secretary*.

NEW ENGLAND ROENTGEN RAY SOCIETY

THE December meeting of the New England Roentgen Ray Society will be held at the Boston City Hospital on Friday, December 18th, at eight o'clock. The following papers will be presented:

"Some Phases of Metastatic Chest Conditions"—Dr. Edwin Habbe.

"Calcified Tumors in the Abdomen"—Dr. Nicholas Butler.

"Extrinsic Bowel Tumors"—Dr. Max Ritvo.

"Choice of Treatment in Chest Malignancies"—Dr. I. Gerber.

There will be an opportunity for members of the Society to show interesting or instructive cases; communicate with Secretary before meeting.

THE NORFOLK DISTRICT MEDICAL SOCIETY

PROPOSED SCHEDULE OF MEETINGS FOR THE
REMAINDER OF THE YEAR

Dec. 30, 1925. Boston Medical Library. In conjunction with Suffolk District Medical Society. Municipal Health Program—Drs. Mahoney, Wilinsky and Ceconi.

Jan. 26, 1926. Boston City Hospital. Presentation and discussion of Hemorrhagic Cases. Drs. Edward N. Libby, Ralph C. Larrabee and Arthur R. Kimpton.

February 23, 1926. Roxbury Masonic Temple. Hypertension and Renal Diseases. Drs. O'Hare, Breed, Ohler and Frost.

March 30, 1925. Massachusetts General Hospital. Fractures. Dr. Daniel F. Jones.

May 11, 1925. Annual meeting. Program undetermined.

FRANK S. CRUICKSHANK, *Secretary*.

SUFFOLK DISTRICT MEDICAL SOCIETY
PROGRAM

SUFFOLK District Medical Society in conjunction with Norfolk District Medical Society.

Boston Medical Library—John Ware Hall—Wednesday, Dec. 30, 1925, at 8:15 P. M.

Municipal Preventive Medicine: The Health Centre and Child Welfare programs of the city as well as other new work—public health will be described.

Speakers: Drs. Francis X. Mahoney, Health Commissioner of Boston; Charles F. Wilinsky, Deputy Health Commissioner; John A. Ceconi, Director, Dept. of School Hygiene.

Discussion opened by Dr. Roger I. Lee.

Light refreshments after the meeting.

C. MORTON SMITH, M.D., *President*

ARTHUR H. CROSBIE, M.D., *Secretary*,
520 Commonwealth Ave.

WEST END NEIGHBORHOOD
CONFERENCE

THE regular meeting of the West End Neighborhood Conference will be held at the Blossom Street Health Unit, Friday, Dec. 18, 1925, at 3:45 P. M.

At the regular meeting of the Health Unit Executive Council, it was voted to submit to the conference for free discussion, the problem members and agencies of the West End Neighborhood Conference.

The advisability of making the future meetings a forum and round table type in preference to different speakers was discussed, and it was voted to submit this question to the group of members and agencies of the West End Neighborhood Conference.

It is extremely important that each agency send a representative to the conference, and the roll will be called.

At this meeting the question of periodic health examinations will be discussed and Dr. M. Lugitch, in charge of the Periodic Health Examination Clinic at Blossom Street will lead the discussion.

CHARLES F. WILINSKY, M.D., *Secretary*,
West End Neighborhood Conference.

BOSTON CITY HOSPITAL

A STAFF CLINICAL MEETING will be held in the Cheever Surgical Amphitheatre, Thursday, Dec. 17, 1925, at 4 P. M.

Demonstration of cases by members of the Medical and Surgical Staff. Discussion of the cases invited. Physicians, medical students and nurses invited.

JOHN J. DOWLING, *Superintendent*.

THE NEWBURGH AND POUGHKEEPSIE
MEDICAL SOCIETIES

THE joint annual meeting of the Newburgh and Poughkeepsie Medical Societies was held at Newburgh on November 17. Dr. Smith Ely Jelliffe of New York gave an Address on Psychoanalysis and Organic Disease.

SOCIETY MEETINGS

DISTRICT MEDICAL SOCIETIES

Essex North District Medical Society

January 6, 1926—The semi-annual meeting at Haverhill.
May 5, 1926—The annual meeting at Lawrence.

Essex South District Medical Society

Wednesday, January 6—Beverly Hospital, Clinic, 5 P. M. Dinner, 7 P. M. Speaker, Dr. Paul D. White, Boston, "Recent Progress in the Study and Treatment of Heart Disease."
Wednesday, February 3—At 7 P. M. Hawthorne Hotel, Salem. Dr. Walter Timme, New York. Subject to be announced.
Wednesday, March 3—Lynn Hospital, Clinic, 5 P. M. Dinner, 7 P. M. Dr. Charles E. Mongan, Somerville, "Some Problems of Present-Day Practice."
Thursday, May 6—Censors meet at Salem Hospital, 3:30 P. M.
Tuesday, May 11—The Tavern, Gloucester. Annual meeting. Speaker to be announced.

Middlesex East District Society

January 13—At the Harvard Club at 6:30 P. M. Address by Dr. Richard Ohler, "Metabolism."
February 10—At the Harvard Club. Address by Dr. William F. Roos, subject, "Industrial Poisoning."
April 16—At the Harvard Club at 6:30 P. M. Address by Dr. William E. Ladd, subject to be announced later.
May—Annual meeting, Colonial Inn, North Reading. Subject and speaker to be announced.

Suffolk District Medical Society

January 6—At 8:15 P. M. Medical Section (meeting postponed from December). Dr. W. J. MacDonald will speak on "Experimental Work in High Blood Pressure."
January 27—At 8:15 P. M. Combined meeting with Boston Medical Library. "Medical Experience of an Explorer," Dr. J. Hamilton Rice.
February 24—At 8:15 P. M. Surgical Section. "Post-operative Care of Surgical Cases," Dr. Dean Lewis, Chicago. "Surgical Convalescence," by Dr. John Bryant.
March 31—At 8:15 P. M. Medical Section. "Some Experiments in Group Physical Examination," Dr. Roger I. Lee.
April 28—At 8:15 P. M. Annual meeting. Election of officers. "Some Diagnostic, Prognostic and Therapeutic Aspects of Disorders of the Blood," Drs. George R. Minot, Cyrus C. Sturge and Raphael Isaac.

Notices of meetings must reach the JOURNAL office on the Friday preceding the date of issue in which they are to appear.